MAR 12 1935

The Badge of Pharmacy Should Be Open-Minded, Intelligent Consideration of Problems Affecting Human Welfare; Few, if Any, Can Be More Important Than Those That Are for the Promotion and Protection of Public Health.

Vol. XXIV, No. 2 FEBRUARY, 1935

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

TRADE MARK

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Published Monthly by the American Pharmaceutical Association: Office of Publication, 20th & Northampton Sts., Easton, Pa. Editorial Office, 2215 Constitution Ave., Washington, D. C. Annual Subscription, $4.00; Canada, $4.35; Other Foreign, $4.50; Single Numbers, 35 cents; Canada, 40 cents; Other Foreign, 50 cents.

THE 83rd ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN PORTLAND, ORE., AUGUST 5–10, 1935.

Local Secretary, A. O. Mickelsen, N. E. 6th Ave. at Oregon St., Portland, Ore., Hotel Multnomah, Headquarters.

The 1935 Meetings of the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, Conference of Pharmaceutical Association Secretaries, of the Pharmaceutical Law Enforcement Officials and the Plant Science Seminar will also be held in Portland.

Entered as second-class Matter, January 23, 1917, at the Post Office at Easton, Pa., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103. Act of October 3, 1917; authorized July 10, 1918.

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E. F. KELLY, Secretary,
2215 Constitution Ave.,
Washington, D. C.

THE UNITED STATES PUBLIC HEALTH SERVICE.

PARTS OF THE SURGEON GENERAL'S REPORT TO CONGRESS FOR 1934.

It is interesting to note that for the calendar year 1933 the general death rate, 10.5 per 1000 population, was the lowest ever recorded in the United States; and the rate for 1932 was next lowest, 10.8 per 1000. While health conditions remained comparatively good for the first half of 1934, the death rates for many localities were higher than those for the preceding year.

In spite of the economic conditions, the number of deaths from tuberculosis continued to decrease. For the calendar year 1933 the death rate was 59 per 100,000 population—5 per cent below the previous low minimum. The typhoid fever death rate was also the lowest ever recorded—only 3.5 deaths per 100,000, which was 8 per cent below the previous minimum. The diphtheria rate dropped to 3.9 per 100,000—also the lowest death rate ever recorded by the Public Health Service for this disease. . . .

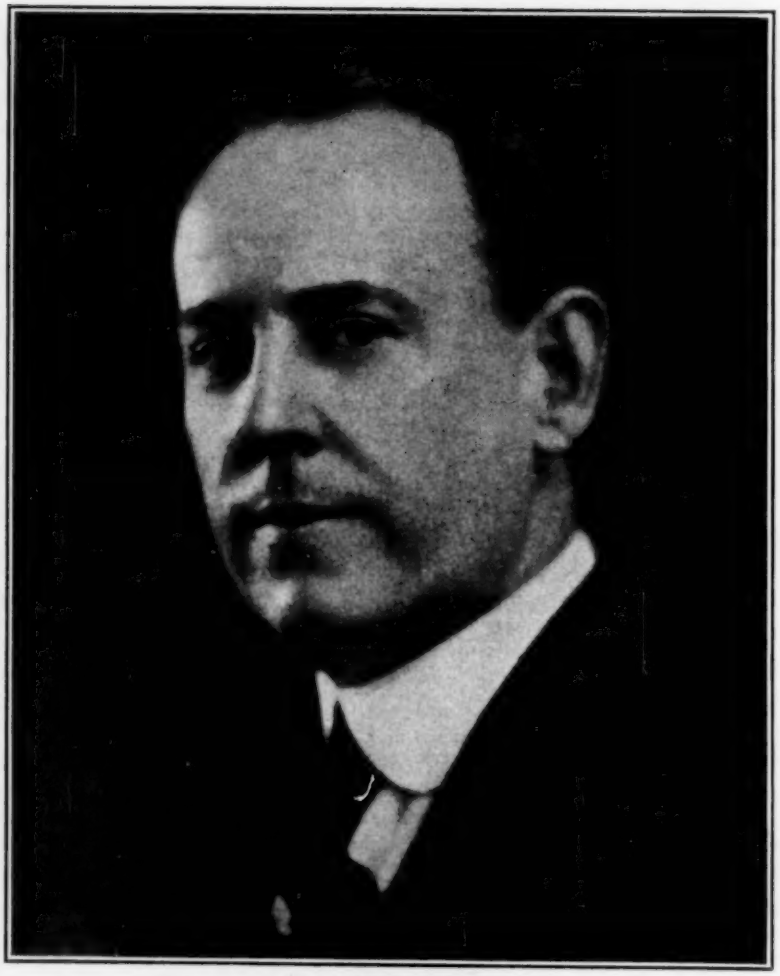
Smallpox, the principal scourge of mankind in the last century, still caused more than 75,000 deaths in countries sufficiently advanced in health matters to keep vital statistics records; but less than 40 of these deaths occurred in the United States, although nearly 7000 cases of the disease were reported. Several European countries have advanced so far in preventive activities that they did not have a single case of smallpox in 1933. . . .

The Public Health Service covers a broad field in its research activities in the cause and prevention of disease. Its principal laboratory is the National Institute of Health in Washington, but it also maintains field laboratories in various parts of the country. The subjects of research include, among others, cancer, encephalitis, heart disease, leprosy, malaria, psittacosis, Rocky Mountain spotted fever, tularæmia, tick fever, child hygiene, dental conditions, industrial dermatoses and milk sanitation. . . .

By means of animal experimentation, a new method was discovered for the treatment of bichloride poisoning in human cases. It was shown in actual cases that death from otherwise fatal doses of bichloride can be prevented when formaldehyde sulphoxylate is given by mouth and injection into the vein within a reasonable time after the poison has been swallowed. . . .

The Public Health Service was recently authorized by law to conduct two Narcotic Farms, *i. e.*, hospitals for the treatment of Federal prisoners who are narcotic addicts, and to furnish medical and psychiatric care to prisoners in Federal penal and correctional institutions. The first of these Narcotic Farms is under construction at Lexington, Ky., and will be completed by April 1935. The other Farm is located at Forth Worth, Texas, and funds for beginning construction were made available through the Public Works Administration. At the close of the year the Public Health Service was operating 17 medical units in connection with the care of the inmates of Federal penal and correctional institutions. . . .

In the field of public health, new problems constantly arise and new dangers appear, such as those illustrated by the unusual type of encephalitis appearing in St. Louis in 1933, the extensive outbreak of amœbic dysentery in Chicago, and the necessity for the control of distillery wastes which are now being emptied into already heavily overtaxed and polluted streams, thus seriously affecting the water supplies of the country. Constant vigilance is required for the early detection and study of these new continually arising dangers to the public health in order successfully to combat them.



A. HOMER SMITH.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XXIV FEBRUARY, 1935 No. 2

THE PRESIDENT OF THE AMERICAN DRUG MANUFACTURERS' ASSOCIATION.

Alfred Homer Smith, reëlected president of the American Drug Manufacturers' Association, 1934–1935, was born in Smyrna, Delaware, December 17, 1879, the son of Alfred Henry and Emily (Brown) Smith. After completing his studies in Smyrna high school, he engaged in a retail pharmacy and then matriculated at the Philadelphia College of Pharmacy and Science, graduating in 1902. Thereafter he was salesman for H. K. Mulford Company, then district manager and secretary and general sales manager of the corporation.

He received appointment as Lieutenant Colonel in the U. S. Army during the World War and served on the War Industries Board, Council on National Defense and National Advisory Council, Treasury Department, U. S. A.

From 1920–1922, Mr. Smith was secretary and member of the Board of Directors of E. R. Squibb & Sons and is now president of Sharp & Dohme.

Before his election to the presidency of the American Drug Manufacturers' Association, Mr. Smith served on a number of important committees, as secretary and first vice-president of the Association.

He is a member of the Board of Trustees of the Philadelphia College of Pharmacy and Science and holds membership in a number of organizations; among them, the Manufacturers, Bankers, Art, Philadelphia Country and Corinthian Yacht Clubs; he is a life member of the AMERICAN PHARMACEUTICAL ASSOCIATION.

February 3, 1908, Mr. Smith married Evelyn Hagen, of Lancaster, Pa. (b. Charlotte, N. C.), they reside in Alden Park, Germantown, Philadelphia, Pa.

EDITORIAL

E. G. EBERLE, EDITOR 2215 Constitution Ave., WASHINGTON, D. C.

FIRST AID WEEK.

THE week of March 11th to 16th has been designated "First Aid Week;" a purpose is to acquaint the public with the means for rendering first aid to injured and to those who suddenly become ill. Another purpose is to display preparations that may be employed in cases of injury and illness.

How far the pharmacist can go in rendering service when called upon to relieve the afflicted is a subject that should receive consideration, for selfish motives may bring about unfortunate results. There can be no objection to displays of first-aid articles but the rulings on the extent of medical advice by pharmacists are not uniform in all states. A leading Massachusetts case lays down the principle that "If a pharmacist sells medicine, receiving payment therefor, and gives advice gratuitously as to the use to be made of it, he is not holding himself out as a physician." The various licensure acts, however, are more and more tending to restrict the legal limits of such advice.

In 1928, the United States Public Health Service prepared an article, published in the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION (page 699), which advises that every one become familiar with first-aid methods for treating the injured. "First aid has been defined as the temporary care of an injured person by simple, commonsense methods, based on principles of medicine and surgery, that may be applied easily by persons not professionally trained in these subjects." It should be noted that the work of first aid ceases when the injured person has been turned over to the care of a physician.

When it is recalled that more than 28,000 persons are killed in the United States by traffic accidents, over 13,000 by falls, more than 6000 by burns and drowning, over 27,000 by other accidental means and a greater number are more or less seriously injured and many are taken suddenly ill, the importance of first aid is realized and the effort to supply the needs under these conditions must be considered as a worthy service.

Every home needs first-aid means, and to belittle efforts as mercenary, because sales may bring financial returns, is not proper or right. The advice of this comment is directed to use First Aid Week for rendering service and to encourage study of the proper means and correct methods for application, so that commonsense advice can be given to those who need it. The displays should be planned to acquaint the public with the professional service of pharmacists and not bring into evidence items that are strictly merchandise. A week devoted to display of the lines indicated is deserving of encouragement, and it is hoped that all pharmacists will take an active part in this annual event.

THE NARCOTIC DRUG TRAFFIC.

DURING recent months there have been quite a number of convictions for illegal sale of narcotics. At a meeting in Geneva of the Advisory Committee on Traffic in Drugs of the League of Nations, it was stated that although the steady flow of drugs from licensed factories into illicit traffic had much decreased, clandes-

tine factories were springing up and becoming a more abundant source of supply than the authorized factories had been. Study is being given to the organization of a specialized police force for the detection and closure of these factories and the development of an effective way of combating illicit traffic.

Jean Perrigault reported on the conditions in the Paris (France) press which were verified by the Commission. Production in some countries is kept to a high level and it is from the overflow that large amounts of the smuggled products reach the United States, *where earnest efforts are made to confine the supply of narcotics to lawful use.* There is lack of effort to control in sections of the Far East; the drug peddler is a menace, but countries that permit the manufacture of narcotics without proper restriction of their use are contributing a much greater harm. Smoking opium is being manufactured in excess of that being used under license and the surplus is a source of morphine and heroine for illegal purposes.

He who conducts his business on a dishonest basis must realize that it is only a question of time when he shall have to quit, and to the extent that there is dishonesty in business, to that extent is such business jeopardized. There is a selfishness in narcotic production more sordid than that which comes from the desire for gain, a selfishness which restrains the doing of service and lack of uplifting interest in the misfortune of the afflicted. Great and desirable as government may be, failure to use it in the interest of humanity adds to the responsibility of those to whom the power of government has been given. It is better to set human beings free than to enslave them; to extend aid than to oppress; to construct than destroy; to give health than to make miserable; to lift up than to press down.

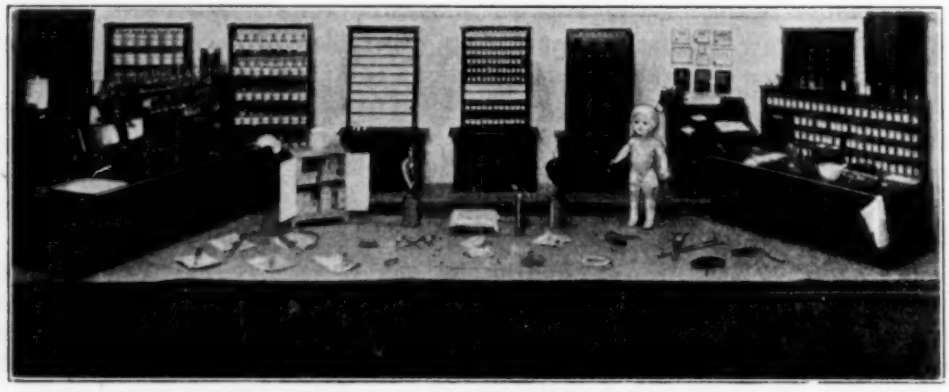
A SERVICE LIBRARY.

THE library of the AMERICAN INSTITUTE OF PHARMACY is developing and members have an opportunity in aiding this service by the donation of books pertaining to pharmacy and allied sciences. The library has rendered service to divisions of the Government and departments have found desired information in its volumes; also individuals and schools. The mails frequently bring requests for information and it is gratifying that in most instances it has been possible to render service.

Modern libraries are provided with windows suitable for exhibits. A writer on the subject of window displays in the *Library Journal* states that these should be changed at regular intervals; they should deal with timely subjects, carefully planned—the changes based on a sequence or they may differ from preceding displays; the purpose of all of them is to interest the public.

The History of Science Society held its December meeting in the AMERICAN INSTITUTE OF PHARMACY and for this occasion several show-case displays were arranged of books dealing with the history of pharmacy which attracted the attention of the visitors and interested them. A related effort in display was made when the Round Table Medical Club held its January meeting in the building; a number of changes were made in the display and this was held over for the visit, on February 9th, of Phi Delta Chi delegates to the conclave in Baltimore, hailing from Massachusetts, New York, Nebraska, Maryland, Ohio, Iowa, Idaho, Kentucky, Colorado, North Carolina, Oklahoma, New Jersey and California.

The District of Columbia Retail Druggists' Association held its February session in the AMERICAN INSTITUTE OF PHARMACY. Comment is made on these events to impress the value of the library and to interest the visitors in increasing the number of books so that more extended library service may be rendered by the AMERICAN PHARMACEUTICAL ASSOCIATION. Numbers of volumes may not have great significance without coördinated selection in order to meet the requirements of pharmacists. The divisions of the AMERICAN INSTITUTE OF PHARMACY, it is hoped, will become service features of the ASSOCIATION.



PRIZE-WINNING PHARMACY WEEK WINDOW.

Apothecaries Hall, established more than a century ago in New Haven, Conn., was voted the Pharmacy Week prize for 1934. The pharmacy is managed by S. G. Gessner, son of a lifetime member of the AMERICAN PHARMACEUTICAL ASSOCIATION, Emil A. Gessner (for sketch see page 1071, JOURNAL A. PH. A., 1928). The latter died February 3, 1930, aged 80 years.

In 1934, a brief history of Apothecaries Hall was published in connection with the celebration of the 150th anniversary of New Haven County Medical Association and the 113th anniversary of Apothecaries Hall.

The prize-winning window display showed a miniature prescription room, equipped with fixtures, shelf bottles, utensils, show globes and sick-room supplies. The cabinets are 29 inches high and 14 inches wide; the laboratory table is equipped and is 14 inches deep, 38 inches wide and 10 inches high; the refrigerator is 12 inches high and in front of it are samples of biologicals. On the prescription counter are preparations in process of compounding.

The store has an interesting collection of antique pharmaceutical equipment and Mr. Gessner uses some of them in displays. We congratulate the prize winner and the many who entered into the contest and thereby gave publicity to professional pharmacy.

The following were selected for the ten prize-winning ribbons donated by the National Association of Retail Druggists, in the order named: Publix Drug Company, Philadelphia, Pa.; John E. O'Brien, Omaha, Neb.; Frank Nau, Portland, Ore.; Terrant Drug Company, Birmingham, Ala.; F. S. Johnston Drug Co., Parsons, W. Va.; Carl J. Heinrich, Superior, Wis.; Morgan & Millard, Baltimore, Md.; John A. Klingstedt, Rockford, Ill.; L. L. Eisentraut, Iowa; H. W. Reuter, St. Louis, Mo.

The following received honorable mention: Freund Pharmacy, Indianapolis, Ind.; Peoples Drug Store, Wilmington, Del.; Finley's New Store, Greenville, Miss.; Dr. Peters' Drug Store, Schulenburg, Tex.; Ballou-Latimer Drug Co., Boise, Idaho; Hoagland's Drug Store, New Brunswick, N. J.; Ace Drug Co., San Diego, Cal.; R. J. Allen Drug Co., Sioux City, Iowa; Nathan A. Mazer, Denver, Colo.; Funk's Pharmacy, Cleveland, Ohio.

Members of National Pharmacy Week Window Display Contest Committee: *Chairman*, John F. McCloskey, E. A. Kimzey, J. Culver, P. Grossiman, A. Worner.

SCIENTIFIC SECTION

BOARD OF REVIEW OF PAPERS.—*Chairman*, F. E. Bibbins, George D. Beal, L. W. Rising, H. M. Burlage, L. W. Rowe, John C. Krantz, Jr., Heber W. Youngken.

A STUDY OF CALOMEL FROM THE PHYSICAL AND THE CHEMICAL STANDPOINT.*

BY CHARLES H. LAWALL AND JOSEPH W. E. HARRISSON.

The two chlorides of mercury have had a long and interesting history. The mercuric chloride dates from the Arabian period under Geber in the 9th century, while the mercurous chloride seems to have first appeared in the 16th century and is described in the works of Beguin and Crollius, under the name of "dulcified mercury."

It has appeared in more physical forms and under a greater diversity of Latin and common names than any other official chemical salt.

It has appeared in every edition of the United States Pharmacopœia.

In the U. S. P. of 1820 directions were given for the preparation of calomel from "oxymuriate of mercury" (corrosive sublimate) and purified mercury, which was three times sublimed and then levigated and elutriated.

In 1830 the process was changed in that mercuric sulphate was first prepared from mercury and sulphuric acid, and this was then mixed with salt and sublimed and the sublimate subsequently purified with solution of ammonium chloride and boiling water and finally levigated and elutriated.

In 1840 the same process was directed as in 1830 with the addition of a test to exclude soluble chlorides.

No further change was made until 1880 when the formula was discontinued and identity tests were added as well as tests for absence of mercuric chloride.

It was not until 1910 that an assay method was introduced. It was in the 1890 Pharmacopœia that a descriptive requirement was introduced which has remained essentially unchanged for four decades and which reads as follows:

> "A white impalpable powder, becoming yellowish white on being triturated with strong pressure, and showing only small isolated crystals under a magnifying power of 100 diameters."

This requirement probably originated in the fact that in European pharmacy two calomels had been recognized, one for sublimed calomel (which was described as distinctly crystalline) and the other for calomel prepared with steam, which was described (as in the paragraph quoted above) as showing under the same magnification (100 diameters) only a few isolated crystals. This same requirement occurs in the 6th edition of the German Pharmacopœia (1926) and in the 4th edition of the Belgian Pharmacopœia (1930).

The reason for this investigation is a rather curious and unusual one.

A private client came to us with the statement that he had suffered from a non-specific urethritis which had been caused by the irritating effect of a prophylactic ointment which had been injected into the urethra.

---

* Scientific Section, A. PH. A., Washington meeting, 1934.

Investigation of this ointment showed the presence of a large number of sharp pointed acicular crystals of calomel and as none of the calomels which were easily accessible showed a microscopic appearance, anything like the specimen in question, it was decided to make a complete study of the calomels made by different manufacturers both in America and in Europe.

The American calomels were obtained by corresponding with the respective manufacturers, while the European calomels were obtained through the kind assistance of Dr. Joseph Rosin, of Merck and Company. In this investigation we have examined sixteen specimens of at least seven different origins, as follows:

American manufacturer	*A*	2 specimens
American manufacturer	*B*	6 specimens
American manufacturer	*C*	1 specimen
German manufacturer	*A*	3 specimens
French manufacturer	*A*	1 specimen
French manufacturer	*B*	1 specimen
English	*A*	1 specimen
Of unknown origin		1 specimen

For many years there have been three different types of calomel described in the literature, differentiated by their methods of manufacture and their titles, and by specific recognition in some of the European pharmacopœias.

These different types are discussed at some length in "Hager's Handbuch der Pharmaceutischen Praxis," the following abstracts being taken from the 5th edition of that famous work, published in Berlin in 1907, where photographs are shown of their comparative appearance when examined under the microscope.

They are distinguished by the following Latin titles:

A. *Hydrargyrum chloratum præparatum*
B. *Hydrargyrum chloratum vapore paratum*
C. *Hydrargyrum chloratum præcipitatum*

Type A is made by subliming a mixture of mercuric chloride and metallic mercury.

This type is first produced in white, glistening masses of crystalline texture, the product being subsequently reduced to a fine powder by levigation and purified with water in unglazed porcelain mortars or in ball mills.

It occurs as a fine, impalpable, yellowish white, dustless powder, which has a tendency to agglutinate and which under microscopic examination is found to consist of broken crystal fragments which are larger in size than those observed in other types.

Type B is made by permitting calomel vapor (obtained by a reaction similar to that described above or by starting with the crude product made as above, before levigation) to come in contact with steam or cold air in a closed vessel or chamber. Under these conditions the calomel condenses in the form of small crystals and crystal aggregates. It is not always necessary to levigate this variety but it is sometimes done.

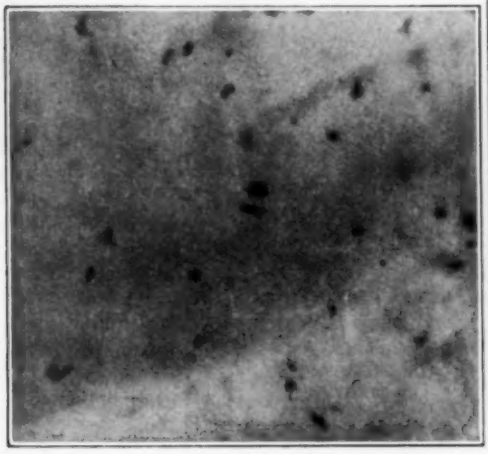
It occurs as a dusty powder which does not show a tendency to cohere when pressed between the fingers. Under the microscope it shows translucent prismatic crystals of a great variety of sizes and shapes and of which the individual particles are smaller than in A.

Type C is made by precipitation. There is a choice of a number of methods of which the two following are typical. In one method a dilute solution (1 in 30) of mercuric chloride is saturated with purified sulphur dioxide. After several hours standing to complete the reduction and precipitation, the precipitate is collected, washed and dried. In another method mercurous nitrate solution is precipitated with a diluted hydrochloric acid and the precipitate subsequently collected, washed and dried.

Precipitated calomel is a heavy, fine, amorphous, white powder, greasy to the touch and very adherent to the fingers. It is the finest of all of the types in the size of the particles when subjected to microscopic examination.

All three of these types are light sensitive in the presence of moisture and must be dried and handled in the dark before finally packaging for the market.

Types A and C have the property of agglutinating and both varieties are unsuitable for dusting purposes.



Calomel specimen No. 1. (Specimens Nos. 4, 10, 12 and 15 were of similar appearance.)

Calomel specimen No. 2. (Specimens Nos. 3 and 14 were of similar appearance, No. 14, however, contained more acicular crystals.)

Type B does not agglutinate and is suitable for dusting, and according to Hager is *the variety to be dispensed when "calomel" is ordered.*

Type A is known by the following Latin names:

Hydrargyri subchloridum
Hydrargyrum chloratum
Hydrargyrum chloratum mite
Hydrargyrum chloratum mite sublimatum paratum
Hydrargyrum chloratum mite praeparatum seu levigatum.

Type B is known by the following Latin names:

Hydrargyri chloridum mite
Hydrargyrum chloratum vapore paratum
Calomel vapore paratum.

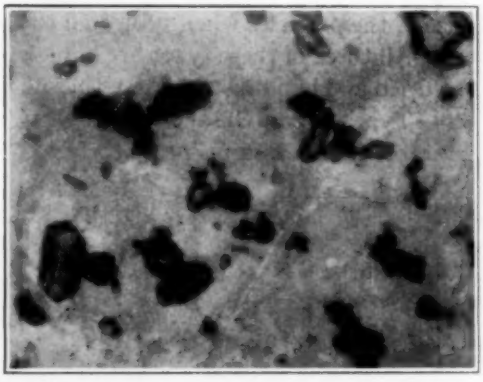
Type C is known by the following Latin names:

Hydrargyrum chloratum via humida paratum
Hydrargyrum chloratum mite præcipitatione paratum.

The specimens were labeled as follows (omitting the name of the manufacturer):[1]

1, Calomel, U. S. P. special, finely powdered; 2, Calomel, mercurous chloride, C.P.; 3, Calomel, U. S. P., mercurous chloride; 4, Calomel, U. S. P. X special, fine powder; 5, Calomel, mild mercurous chloride, U. S. P.; 6, Calomel, reagent; 7, Calomel, mild mercurous chloride, U. S. P. X; 8, Hydrarg. chlor. mite, sublimatum; 9, Hydrarg. chlor. mite, vapore paratum; 10, Hydrarg. chlor. mite, precip., *via* humida paratum; 11, Protochlorure demercure, calomel a la vapeur; 12, Protochlorure de mercure, pricipite blanc; 13, Calomel; 14, Calomel; 15, Calomel, U. S. P. special, fine powder; 16, Calomel, sublimed, not powdered.

Calomel specimen from ointment (*a*).



Calomel specimen No. 5. (Specimens Nos. 8, 9, 11, 13 and 16 were of similar appearance.)

TABULATION OF RESULTS OF EXAMINATION OF CALOMEL SPECIMENS, APPLYING U. S. P. TESTS.

No.		Assay. %	Other U. S. P. Tests.
1	American manufacturer *A*	99.96	O. K.
2	American manufacturer *B*	99.67	O. K.
3	American manufacturer *C*	99.51	O. K.
4	American manufacturer *B*	99.95	O. K.
5	American manufacturer *A*	100.09	O. K.
6	American manufacturer *B*	99.91	O. K.
7	American manufacturer *B*	100.05	O. K.
8	German manufacturer *A*	99.42	O. K.
9	German manufacturer *A*	99.39	O. K.
10	German manufacturer *A*	99.69	O. K.
11	French manufacturer *A*	98.93	O. K.
12	French manufacturer *B*	99.13	O. K. except 0.15% residue on heating
13	English manufacturer	98.78	O. K.
14	American manufacturer (identity unknown)	99.13	O. K.
15	American manufacturer (identity unknown)	100.06	O. K.
16	American manufacturer (unpowdered)	100.36	O. K.

A small portion of the calomel was mixed on a microscope slide with a 60% aqueous solution of glycerin.

An examination was first made with a 10 X eyepiece and a 4-mm. objective, referred to as "low power." Further examination was then made with a 20 X eye-

[1] Five illustrations of photomicrographs of Calomel specimens are shown.

NOTE: The word "number" is omitted preceding specimen.

piece and a 4-mm. objective, referred to as "high power." The measurements were made with a stage micrometer under 8-mm. objective with a 20 X eyepiece.

No. 1.—American manufacturer *A*. Under low power this specimen appeared crystalline but on examination under high power the particles are seen to be round or oval and do not show a crystalline structure. The largest particles are less than 0.1 μ in length.

No. 2.—About half the total number of particles are clear columnar crystals about 2 μ in length with the width from one-fourth to one-eighth of the length. There are a few slender acicular crystals. About half the number of particles are rosettes and crystal aggregates ranging in diameter from 0.5 to 1.5 μ.

No. 3.—This specimen is very similar in appearance to No. 2 except that some of the rosettes are 2 μ in diameter.

No. 4.—This specimen is very similar in appearance to No. 1.

No. 5.—This specimen shows more crystal fragments than rosette aggregates, although they are not acicular.

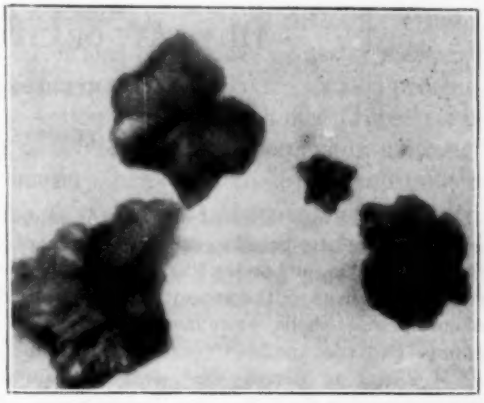
The crystal fragments range in size from 0.25 μ to 1 μ and a few even as large as 2 μ. The rosettes average from 0.5 to 1 μ in diameter.

No. 6.—This specimen is composed almost entirely of rosettes ranging in size from 0.5 to 2 μ in diameter. There is an occasional sharp pointed columnar crystal about 3 μ in length.

No. 7.—This specimen is almost identical with No. 6 except that the range in size of the rosettes seems to be slightly greater, the smaller being 0.25 μ and the larger 3 μ.

No. 8.—This specimen is composed of fairly round rosettes mostly uniform in size, a few as small as 0.25 μ in diameter and a few as large as 1 μ. The separate crystals are very few in number.

No. 9.—This specimen consists entirely of small rosettes and crystal aggregates mostly ranging from 0.25 to 0.5 μ in diameter, a few reaching 1 μ in size. There are no acicular crystals in this specimen.



Calomel specimen No. 6. (Specimen No. 7 was of similar appearance.)

No. 10.—This specimen consists almost entirely of very small blunt cylinders of uniform diameter, which show no evident crystalline character under any magnification. The length of these particles is about 0.1 μ and the diameter is about one-fourth of the length.

No. 11.—This specimen is composed mainly of rosettes and crystal aggregates ranging from 0.25 to 1 μ in diameter. There are a few separate columnar or prismatic crystals, some more than 2 μ in length, and a number of smaller particles, probably broken fragments of these columnar crystals.

No. 12.—This consists of many small irregular-shaped particles ranging from 0.2 μ down to 0.05 μ in size. The layer particles may be aggregates of the smaller ones. There are very few columnar or prismatic crystals.

No. 13.—This specimen is composed entirely of rosettes and crystal aggregates, averaging from 0.25 μ to 0.75 μ with a few as large as 1 μ.

No. 14—This specimen, which is of unknown origin, contains the largest proportions of acicular or columnar crystals of any specimen examined.

The acicular crystals range from 0.5 to 2.5 μ in length, the width being from $^1/_8$ to $^1/_4$ the length.

The rosette aggregates which constitute the remainder of the specimen are rather uniform in size, averaging 0.75 μ in diameter.

No. 15.—This specimen consists of small particles mostly cylindrical or rod shaped, some few of which show a crystalline structure. The largest rod-shaped particles are about 0.2 μ in length, but there are many particles less than 0.1 μ in diameter.

No. 16.—This specimen shows a variety of forms of particles. There are some isolated crystals (not acicular), a few rosettes, a number of crystalline aggregates and some very small particles. The range in size is from 0.05 to 0.1 μ.

No. 17.—(*a*) and (*b*) is a specimen of the calomel extracted from the ointment which led to the investigation.

In these specimens large and pointed crystals, some of which appear to have been eroded, are in evidence.

None of the commercial calomels are identical with this specimen in appearance, and it is possible that some alteration in the physical condition of the crystals in the ointment sample may have resulted as a consequence of the action of the fat of the ointment base on the calomel after the ointment was prepared.

The results of the survey are interesting as showing the high quality to which the specimens conformed and also as illustrating the wide variance in size and type of particles as shown by the photomicrograph illustrations, all of which are on the same basis of magnification.

THE ASSAY OF CITRINE OINTMENT.*

An Experimental Study.[1]

BY THOMAS G. WRIGHT.

INTRODUCTION.

The Citrine Ointment of to-day is an ointment which is essentially a mixture of mercuric nitrate with a fatty base formed by the action of nitric acid upon lard. An ointment by this name first appeared in the London Pharmacopœia of 1650 and since that date there has been a wide difference of opinion as to its composition, stability and assay. The original preparation was a mixture of coral, limpet shells, white marble, white lead, quartz and tragacanth, incorporated with a base of hogs' lard, suet and hens' grease; but contained no mercury.

Nitrate of Mercury Ointment, approximating in composition the present Citrine Ointment, first appeared in the Edinburgh Pharmacopœia of 1722 and was introduced, according to Christison's Dispensatory, as a substitute for a then popular proprietary remedy, "Golden Eye Ointment," an ointment of yellow oxide of mercury. It was not until 1746 that a similar ointment was admitted to the London Pharmacopœia. A milder ointment, one made with twice the quantity of lard, was made official in the Edinburgh Pharmacopœia of 1792. An ointment composed of mercury, nitric acid, lard and olive oil was included in the Dublin Pharmacopœia of 1807. This ointment was admitted to the British Pharmacopœia of 1864, and one of similar composition was admitted to the French Pharmacopœia at a later date. In this country, the ointment received official recognition as early as 1820, when it appeared in the Pharmacopœia of the United States under the title of Unguentum Hydrargyri Nitratis. It was readmitted at each succeeding revision of the Pharmacopœia until that of 1920 when it was dropped. Its official status, however, was not changed as it was immediately given a place in the National Formulary.

From the date of its introduction into the Edinburgh Pharmacopœia to the present time, many different formulas have been suggested for the preparation of the ointment, the principal objectives being to simplify the preparation of the elaidin base and to improve the keeping qualities of the ointment. This phase of the subject, in so far as it pertains to the work reported in this paper, will be discussed in detail under the composition of the ointment.

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* Scientific Section, A. Ph. A., Washington meeting, 1935.

[1] From the laboratory of A. G. DuMez, Professor of Pharmacy, School of Pharmacy of the University of Maryland. Compiled from a thesis submitted to the Faculty of the Graduate School of the University of Maryland in partial fulfilment of the requirements for the degree of Master of Science.

Considerable literature is available dealing with the preparation and stability of the ointment (1), some work on the composition of the ointment has been reported, but little has been published regarding its assay. Work along this line is therefore needed and particularly at this time when the National Formulary is being revised. It was primarily for this reason that the study reported in this paper was undertaken.

COMPOSITION OF THE OINTMENT.

Before undertaking an analysis of any kind it is desirable that as much information as possible be obtained on the composition of the material to be analyzed. This is particularly true in the case of Citrine Ointment. While the component of importance, from a pharmaceutical standpoint, in this instance is mercury, the analytical method selected for the quantitative determination of the mercury will depend largely upon the form in which the latter occurs in the ointment.

As stated in the introduction, the composition of the ointment has been the subject of study by several investigators (2), and while the results obtained by them, particularly those obtained by the early investigators, were not in complete accord, the following general conclusions may be drawn. The ointment is essentially a homogeneous mixture of mercuric nitrate solution with a fatty base called elaidin. It is quite probable that it contains some basic oxides of mercury in additon to the normal nitrate and that a portion of the mercury is also present as mercuric elaidate, resulting from the interaction of elaidin with mercuric nitrate.

Citrine Ointment is prepared by first dissolving metallic mercury in a strong solution of nitric acid, a violent reaction occurring between these two substances with the formation of mercuric nitrate, as the chief product and probably some other compounds of nitrogen of little importance in this connection. Some investigators have expressed the view that this solution is a mixture of many chemical compounds. J. Laidley (3) believed the solution to be a mixture of mercurous and mercuric nitrates, while A. Astrug (4) considered the solution to be composed of mercuric nitrate, mercurous nitrate, nitrogen peroxide, nitrogen dioxide and free nitric acid.

The second step in the preparation of the ointment is that of preparing the base. The latter is the product resulting from the reaction occurring when nitric acid is added to lard. Lard is chiefly a mixture of the glyceryl esters of stearic, palmitic and oleic acids, the glyceryl ester of oleic acid predominating. When nitric acid is added to this mixture, it is reduced to nitrous acid and this in turn reacts with the oleic acid ester to form the isomer, elaidin, which is the ointment base. Some investigators have contended that the yellow color of the ointment is due to elaidin. H. C. Cook (5) held this view. Astrug and M. Donovan (6) on the other hand, reported the color to be due to basic mercuric nitrate, Hg_2OHNO_3, arising from the action of nitrogen dioxide on mercuric nitrate. A. Baumé (7) claimed that a "soap" having no yellow color is formed when nitric acid reacts with fat and that precipitation of mercury in the ointment is the cause for the color formation. The explanation of Baumé is now known to be fallacious since the fat turns yellow before the mercury solution is added, and is due to the action of the nitric acid alone.

The final step in the preparation of the ointment is that of incorporating the mercury with the base. This is accomplished by dissolving the required amount of mercury in nitric acid and stirring the solution into the fat. At this point in

the preparation of the ointment, most investigators believe that a series of reactions takes place with the formation of compounds in which mercury is organically combined. This belief is probably well founded, and the compounds of mercury most likely to be formed are the salts of the fatty acids liberated in the partial hydrolysis of the glyceryl esters. The ointment, therefore, probably contains some mercuric oleate, palmitate and stearate. Elaidate of mercury should also be present for the same reason.

ASSAY METHODS.

Chemical assay methods, especially those designed for the determination of pharmaceutical preparations, should be methods that are practical from the standpoint of material and apparatus used, ease of carrying out the procedure, and time consumed; but should, nevertheless, be sufficiently accurate to give results which may be depended upon arriving at a fair evaluation of the substance assayed, even though other substances of a similar nature may be present.

The assay methods for ointments containing mercury compounds, reported in the literature, were reviewed to determine if they could be adapted to the assay of Citrine Ointment. In the main, these methods consisted of the decomposition of the ointment with acid and subsequent titration of the remaining mercury solution. Most of these were rejected without experimental trial because of their complexity and because the time required to complete the assays was too great to permit of their use in practice. The procedure of I. V. S. Stanislaus and E. A. Eaton for the assay of Citrine Ointment (8) was reviewed. The method consists of treating the ointment with a solution of potassium hydroxide, allowing the mixture to stand for 24 to 48 hours for complete subsidence of the mercury oxides, precipitation of the mercury as sulphides, addition of iodine solution, and subsequent titration with sodium thiosulphate solution. Although this method seemed to be satisfactory from a theoretical standpoint, it was deemed to be unsatisfactory because of the length of time required to carry it out, and was, therefore, not given an experimental trial. The method of Strickland (9) in which the ointment is decomposed by nitric acid and the remaining mercury solution titrated with potassium thiocyanate, seemed to meet most of the requirements of a good assay process. It was, therefore, used as a basis for beginning the work reported in this paper.

EXPERIMENTAL PART.

For the purpose of providing material for assay, the mercury content of which was known, it was necessary to prepare a batch of ointment using mercury of known purity. A quantity of the ointment was therefore prepared according to the directions given in the National Formulary V, nitric acid (sp. gr., 1.42) was used and the fat was the best grade of lard obtainable. The lard was melted in a large porcelain evaporating dish at a temperature not exceeding 45° C. The nitric acid was added and the mixture was heated until the reaction between the lard and acid was complete and all of the olein was converted into the isomer elaidin. The specified quantity of mercury was then dissolved in nitric acid without the aid of heat and added to the elaidin base, which had been allowed to cool. The resulting product was stirred continuously with a glass rod until a uniform mixture of the consistence of an ointment was obtained. The ointment, when cool, was transferred to an amber-colored glass jar, which was covered tightly with a ground glass cover. No contact was made, at any point in the procedure, with metallic utensils.

The mercury used in the preparation of the ointment was assayed for purity by the method of the United States Pharmacopœia X. Twelve determinations were carried out, the results of which are given in the following table:

TABLE I.—ASSAY OF METALLIC MERCURY BY U. S. P. X METHOD.

Sample* No.	1.	2.	3.	4.	5.	6.
Hg found in %	99.29	99.04	99.74	98.75	99.82	99.91
Sample* No.	7	8	9	10	11	12
Hg found in %	99.85	99.98	99.93	99.96	99.95	99.90

* Description of Sample. The mercury used in all of the above assays was obtained from Merck & Co., and labeled triple distilled.

The potassium thiocyanate solution used in the foregoing determinations and in all other assays, was prepared according to the directions of the United States Pharmacopœia X, and was regularly standardized at intervals of about seven days against a $N/10$ solution of silver nitrate which was kept in a ground glass-stoppered bottle painted black, to prevent any deterioration which might be caused by the action of sunlight.

TABLE II.—DETERMINATION OF MERCURY LOST IN PREPARATION OF CITRINE OINTMENT.

Sample No.	Wt. of Hg Taken.	Diluted to Cc.	Aliquot Taken, Cc.	Cc. KCNS.	Equiv. KCNS-Hg.	Wt. of Hg in Sample.	% of Theory.
1A	3.5124	100	10	30.4	0.01003	3.4941	99.48
B	3.5124	100	10	30.4	0.01003	3.4941	99.48
C	3.5124	100	10	30.4	0.01003	3.4941	99.48
D	3.5124	100	10	30.4	0.01003	3.4941	99.48
2A	37.0703	1000	10	32.1	0.01003	36.8957	99.52
B	37.0703	1000	10	32.1	0.01003	36.8957	99.52
C	37.0703	1000	10	32.1	0.01003	36.8957	99.52
D	37.0703	1000	10	32.1	0.01003	36.8957	99.52
3A	69.3710	2000	10	30.0	0.01003	68.9640	99.41
B	69.3710	2000	10	30.0	0.01003	68.9640	99.41
C	69.3710	2000	10	30.0	0.01003	68.9640	99.41
D	69.3710	2000	10	30.0	0.01003	68.9640	99.41

Summary: Sample No. 1 (0.52% Hg lost).
Sample No. 2 (0.48% Hg lost).
Sample No. 3 (0.59% Hg lost).

During the preparation of the ointment the reaction between the mercury and nitric acid becomes violent, with the evolution of considerable heat. Since mercury is a volatile substance, it was believed that there might be an appreciable loss, due to the heat thus generated, and that this condition was responsible for the low results obtained in the assay of the ointment by the different methods in use. To determine the accuracy of this belief three batches of mercuric nitrate solution were made using the approximate quantities of mercury and nitric acid necessary to prepare 50, 500 and 1000 Gm. of Citrine Ointment. The temperature seemed to increase directly with the size of the quantities of reacting materials used, hence, the preparation of the three batches of solution in the quantities stated. The mercury required was accurately weighed and dissolved in the nitric acid which was also weighed. No external heat was applied in these cases. The solutions were titrated with $N/10$ potassium thiocyanate solution in the usual manner, the results compared with the weight of mercury used, and the percentage loss of mercury computed. However, the loss in mercury, if any, was not over 0.59 per cent in any case and this loss was constant irrespective of the quantity of solution prepared as shown by the results presented in the foregoing table:

As previously stated, the method of Strickland (9) seemed to meet most of the requirements for a good assay process, and the analysis of the ointment by this method was therefore taken up. This method, as published, was originally intended for the assay of Mercurial Ointment, of the United States Pharmacopœia, but, according to the originator, it would also serve for the assay of Citrine Ointment.

About 10 Gm. of the ointment, accurately weighed, was heated under a reflux condenser with 100 cc. of nitric acid and the heating continued until all of the mercury had been dissolved and the fatty base completely broken down. The resulting solution was filtered through cotton into a 200-cc. graduated flask and a 3 per cent potassium permanganate solution was added until a permanent pink color was obtained. The solution was then decolorized with 3 per cent ferrous sulphate solution and the volume accurately made up to 200 cc. with distilled water. An aliquot of this solution was titrated with $N/10$ potassium thiocyanate solution. One cc. of potassium thiocyanate solution is equivalent to 0.01003 Gm. of mercury.

The method as outlined in the foregoing was subjected to test in the laboratory and was found to be unsatisfactory as the results obtained with it were low and variable, as shown in Table III.

TABLE III.—ASSAY OF CITRINE OINTMENT BY STRICKLAND'S METHOD.

Sample No.	1.	2.	3.	4.	5.	6.	7.
Hg found in %	4.93	5.37	2.41	4.21	6.79	4.97	2.79
Hg theoretical in %*	6.97	6.97	6.97	6.97	6.97	6.97	6.97

* The theoretical percentage of mercury present was computed from the quantity of triple distilled mercury used in the preparation of the ointment, and which assayed 99.67 per cent pure metallic mercury by the U. S. P. X method.

Many hours of refluxing were required to completely break down the organic matter present in the ointment, and volatilization, due to this continued heating, was probably the chief cause of the loss of mercury.

The addition of potassium permanganate solution also gave some difficulty as a large volume of the permanganate solution was often required to bring about the permanent pink coloration.

Various other methods of analysis were tested but the results obtained were the same as those of the above procedure in every case.

Due to the low results obtained it was believed that some of the organic compounds were not completely broken up and that the resulting solution did not, therefore, contain all of the mercury. A stronger oxidizing agent was thought to be essential for complete decomposition of these compounds. The oxidizing mixture selected for trial consisted of perchloric acid (sp. gr., 1.615), 1 part; fuming nitric acid (sp. gr., 1.49), 2 parts; and distilled water, 2 parts. This combination proved to be a more efficient oxidizing mixture than nitric acid or a mixture of nitric and sulphuric acids, and was satisfactory in other respects. A method of assay based on the use of this oxidizing mixture has therefore, developed. A description of the method follows:

Place about 5 Gm. of the ointment, accurately weighed, in a flask containing 50 cc. of the above acid mixture and reflux until a clear solution is obtained and the brown fumes are no longer distinguishable. Dilute the solution with about 20 cc. of distilled water, and pass it through a filter paper into a 100-cc. volumetric flask. Wash the funnel with sufficient distilled water to bring the volume up to 100 cc. Take a 20-cc. aliquot of this solution and titrate it with $N/10$ potassium thiocyanate solution, using ferric alum as the indicator, until a permanent reddish brown color is obtained. The condenser and flask used should be fitted with ground glass connections in order to avoid contamination and error which might occur from the action of the acid mixture upon either cork or rubber stoppers.

In the first trials, the assay was carried out by refluxing on a water bath and although the results obtained were all within a close range of the theoretical amount of mercury in the ointment and did not show a great variation, the time necessary for refluxing was about three and one-half hours. The results of these determinations are shown in Table IV.

TABLE IV.—ASSAY OF CITRINE OINTMENT BY PERCHLORIC–NITRIC ACID METHOD. HEAT FURNISHED BY WATER BATH.

Sample No.	1.	2.	3.	4.	5.	6.	7.	8.
Hg found in %	8.60	8.57	8.10	8.34	8.61	8.24	8.11	8.38
Hg theoretical in %	8.67	8.67	8.67	8.67	8.67	8.67	8.67	8.67

In order to reduce the time factor of the assay the water bath was eliminated and the ointment was refluxed over a low open flame. With this modification of the procedure, it was found that one hour was sufficient time to decolorize the solution in every case. Two batches of the ointment were prepared and were labeled, "batch A" and "batch B." Seven assays in which this procedure was followed were run on "batch A" and ten determinations were made with "batch B." The results obtained were not only constant but as nearly accurate as can be expected of a method of this type.

TABLE V.—ASSAY OF CITRINE OINTMENT BY PERCHLORIC–NITRIC ACID METHOD, "BATCH A." HEATED OVER OPEN FLAME.

Sample No.	1.	2.	3.	4.	5.	6.	7.
Hg found in %	8.51	8.45	8.65	8.58	8.63	8.63	8.64
Hg theoretical in %	8.67	8.67	8.67	8.67	8.67	8.67	8.67

TABLE VI.—ASSAY OF CITRINE OINTMENT BY PERCHLORIC–NITRIC ACID METHOD, "BATCH B." HEATED OVER OPEN FLAME.

Sample No.	1.	2.	3.	4.	5.
Hg found in %	8.39	8.20	8.37	8.43	8.38
Hg theoretical in %	8.44	8.44	8.44	8.44	8.44

Sample No.	6.	7.	8.	9.	10.
Hg found in %	8.34	8.34	8.34	8.33	8.29
Hg theoretical in %	8.44	8.44	8.44	8.44	8.44

CONCLUSIONS.

From the results obtained in the experiments described above, the following conclusions are drawn:

1. Citrine Ointment is a homogeneous mixture consisting of mercuric nitrate and other mercury compounds which are uniformly distributed.
2. Most assay methods heretofore published are impractical for the determination of the mercury in this ointment because they are too complicated, too lengthy, and because they do not give constant results in the hands of different analysts.
3. Only a very slight amount of the mercury used is lost in the preparation of the ointment.
4. Citrine Ointment can be accurately assayed by the method proposed.
5. The method proposed is simple, rapid and practical.

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THE PHARMACOLOGY OF GALINSOGA.*,[1]

A Series of Micro-Respirometer Studies.

BY MARTIN A. YAVORSKY WITH EDWARD C. REIF.[2]

Preliminary experiments on the pharmacology of Galinsoga (1) indicate the presence of a principle or principles in the plant, which cause a drop in the blood pressure of the dog when certain preparations are injected intravenously.

The chemistry of the plant has been studied by Dr. Karl Muller (2). No reference, however, has been made to the presence of a potent or active constituent.

The purpose of this paper is to describe certain experiments that were conducted to increase our knowledge of the pharmacology of Galinsoga and to add more information concerning the oxygen consumption by tissues, especially the influence upon the same by plant drugs.

It is a well-known fact that tissues removed from the body of a recently killed animal will, if suspended in a suitable medium, utilize oxygen for an indefinite period. Oxidations in animal tissues can be studied by means of a micro-respirometer, various types of which are described by Warburg and his collaborators (3).

Extensive studies on the influence of certain compounds on the oxygen consumption of many tissues have been made by Voegtlin, Rosenthal and Johnson (4), (5).

The action of Vitamin C on the oxidations of tissue *in vitro* has been reported by Harrison (6).

Oxygen consumption by the tissues used in this series of experiments was

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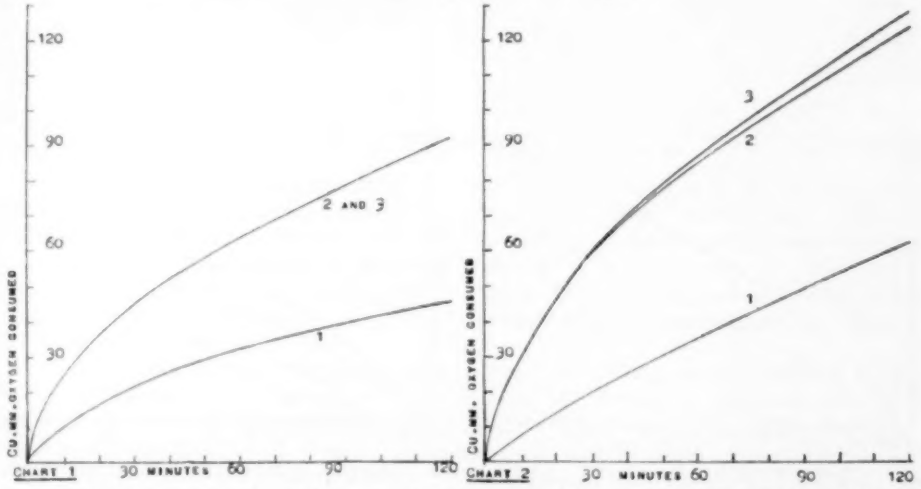
* Scientific Section, A. Ph. A., Washington meeting, 1935.

[1] Submitted as partial requirement for B.S. in Pharmacy, School of Pharmacy, University of Pittsburgh.

[2] Professor of Materia Medica and Botany, School of Pharmacy, University of Pittsburgh.

measured in the Warburg vessels with the Haldane Barcroft manometers, using the technique described by Warburg (3).

The heart tissue of the healthy guinea pig was selected for the studies on Galinsoga. The tissue was finely minced according to the method used by Voegtlin and collaborators (4). This fresh tissue was used in 100-mg. quantities, accurately weighed and immediately transferred to the respirometer trough. All results are reported on a basis of 100 mg. of fresh tissue. Air was the source of oxygen and the carbon dioxide was absorbed by a solution of sodium hydroxide contained in a separate compartment in the respirometer trough. With few exceptions the experiments were run for a period of two (2) hours.



Experiment No. 1.—Object: To determine the influence of a 1% Infusion of Galinsoga.

1.—100 mg. of heart tissue in Locke's Solution. 2 and 3.—100 mg. of heart tissue in 1% Infusion of Galinsoga.

Results: The effect of the Infusion of Galinsoga on the same heart tissue is clearly shown. The increase in oxygen consumption caused by similar quantities of the same infusion was 95.5%.

Experiment No. 2.—Object: To determine if a stronger infusion would cause a relatively greater increase in oxygen consumption.

1.—100 mg. of heart tissue in Locke's Solution. 2.—100 mg. of heart tissue in 2% Infusion of Galinsoga. 3.—100 mg. of heart tissue in 2% Infusion of Galinsoga.

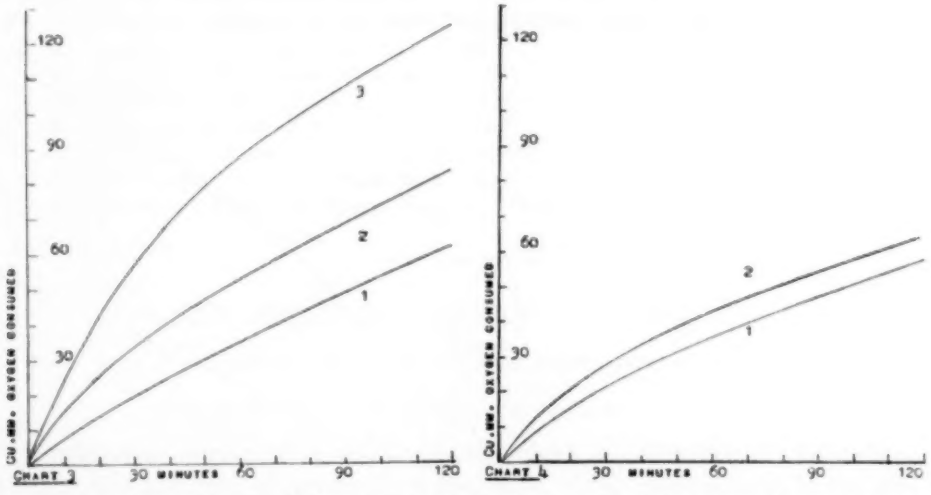
Results: This infusion caused an increase of 106.5 to 108% in the oxygen consumption. It appears as though the double strength infusion contains little more of the active constituents than the 1% infusion.

The material used consisted of the dried leaves, stems not over three (3) mm. in diameter and flowers of *Galinsoga parviflora*. Infusions were made of this material according to the general method by adding boiling water to the material and allowing to stand for one (1) hour before filtering. These infusions were made using 1 and 2 Gm. of the drug for 100 cc. of the finished product, respectively. After filtration these preparations were buffered with the salts used in the preparation of Locke's Solution and in the same concentrations, dextrose being omitted. In all experiments where an infusion was used, 3 cc. was the quantity added to the respirometer trough.

It must be understood that, while in each series of experiments heart tissue from different animals was used and the influence of Galinsoga varied somewhat with the heart tissue, the final figures are comparative in as much as a control tissue is run with each experiment.

CONCLUSIONS.

1. An increase in oxygen consumption by heart tissue is caused by 1% and 2% Infusion of Galinsoga.



Experiment No. 3.—Object: To determine if aging of the infusion would cause a change in the activity of the preparation.

1.—100 mg. of heart tissue in Locke's Solution. 2.—100 mg. of heart tissue in 2% Infusion of Galinsoga 8 days old. 3.—100 mg. of heart tissue in 2% Infusion of Galinsoga freshly prepared.

Results: The infusion 24 hours old caused an increase in oxygen consumption amounting to 108.3%.

The infusion eight (8) days old increased the oxygen consumption to the extent of only 34.1%, showing a considerable loss on aging.

Experiment No. 4.—Object: To determine if the infusion made by extraction with cold water was as active as the one prepared with boiling water.

1.—100 mg. of heart tissue in Locke's Solution. 2.—100 mg. of heart tissue in 1% infusion made by the cold process.

Results: Indicate the possibility that the principle is only slightly soluble in cold water. The infusion was prepared by macerating 1 Gm. of the material in cold water for twelve hours; filtered and buffered with Locke's Solution in the usual manner.

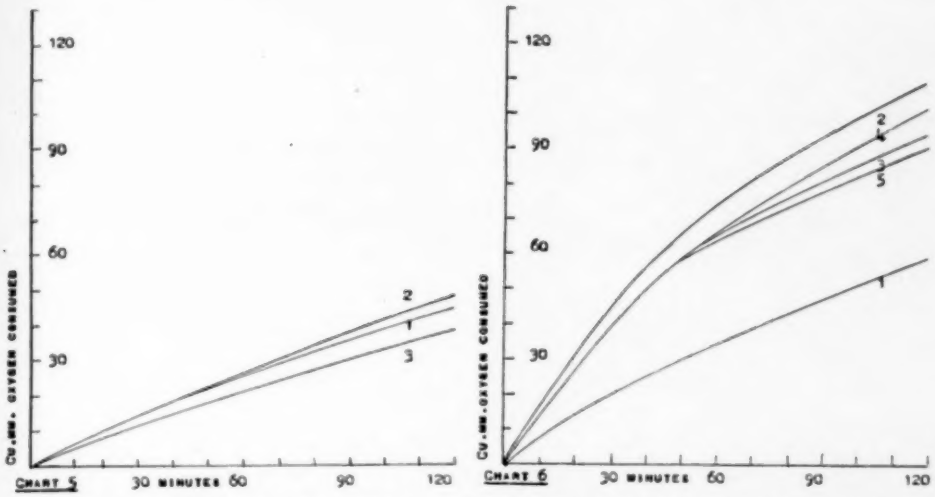
2. Increase in oxygen consumption is not proportional to the concentration of the infusions used.

3. The principle or principles responsible for stimulation are apparently destroyed as the infusion undergoes aging.

4. The principle or principles are apparently not extracted with cold water.

5. Inulin, levulose and dextrose show little influence on oxygen consumption.

6. Saponin causes a slight inhibition.

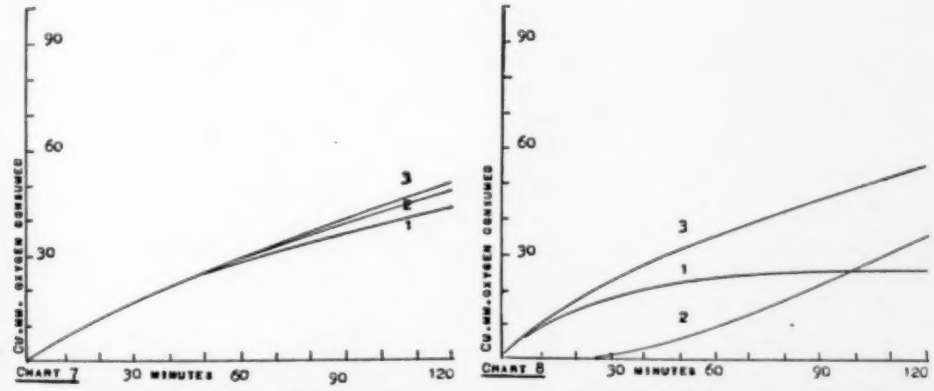


Experiments Nos. 5 and 6.—Object: To determine if the identity of the potent constituent could be determined by the study of certain principles often found in plants. The substances selected for this study were Inulin and Saponin. As indicated by the charts they were studied separately and added to an Infusion of Galinsoga.

1.—100 mg. of heart tissue in Locke's Solution. 2.—100 mg. of heart tissue in Locke's Solution containing 0.2% Inulin. 3.—100 mg. of heart tissue in Locke's Solution containing 0.2% Saponin. (Chart 5.)

1.—100 mg. of heart tissue in Locke's Solution. 2.—100 mg. of heart tissue in 1% Infusion of Galinsoga. 3.—100 mg. of heart tissue in 1% Infusion of Galinsoga plus 0.2% Saponin. 4.—100 mg. of heart tissue in 1% Infusion of Galinsoga plus 0.5% Inulin. 5.—100 mg. of heart tissue in 1% Infusion of Galinsoga plus 0.2% Saponin. (Chart 6.)

Results: Note—The infusion used in these experiments was 24 hours old, kept cool. As shown by Charts 5 and 6 Saponin causes a slight inhibition in oxygen consumption which is also evident when it is added to the Infusion of Galinsoga.



Experiment No. 7.—Object: To determine the influence of Levulose and Dextrose.

1.—100 mg. of heart tissue in Locke's Solution. 2.—100 mg. of heart tissue in 0.2% Levulose added to Locke's Solution. 3.—100 mg. of heart tissue in Locke's Solution containing 0.2% Dextrose.

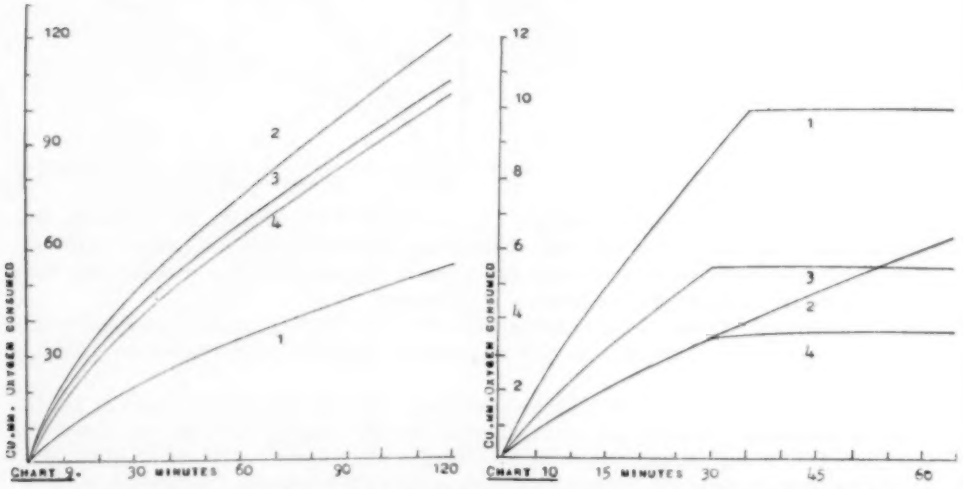
Result: Levulose and Dextrose show little effect on the oxygen consumption of heart tissue.

Experiment No. 8.—Object: To determine the activity of a crystalline mass obtained during the method commonly used for the isolation of a glucoside. A strong infusion was pre-

pared; treated with Litharge; filtered; Hydrogen Sulphide was passed through the filtrate; filtered; concentrated on a water-bath; product was a sticky brown mass containing crystals. 100 mg. of the heart tissue was suspended in Locke's Solution containing 100 mg. of this crystalline mass. A control was run to determine the uptake of Oxygen by 100 mg of the same material. A heart tissue control in Locke's Solution was also run.

Results: 1.—Oxygen uptake by 100 mg. of the mass of crystals. 2.—100 mg. of heart tissue in Locke's Solution containing 100 mg. of the crystalline mass. 3.—100 mg. of heart tissue in Locke's Solution.

Curve 2 shows an inhibition of oxygen consumption when the crystals are added to the Locke's Solution in which is suspended the heart tissue.



Experiment No. 9.—Object: To study the influence of an Infusion of Digitalis on the oxygen consumption of heart tissue and to compare the activity of the same with the activity of an Infusion of Galinsoga.

1.—100 mg. of heart tissue in Locke's Solution. 2.—100 mg. of heart tissue in 1% Infusion of Galinsoga. 3.—100 mg. of heart tissue in 1% Infusion of Digitalis. 4.—100 mg. of heart tissue in 1% Infusion of Digitalis.

Results: Curves 3 and 4 indicate the action of Infusion of Digitalis in the quantities and concentration used is uniform and that Infusion of Digitalis increases the oxygen consumption of heart tissue. Infusion of Digitalis in the quantities used caused an increase of 76.3 and 83%, respectively. Infusion of Galinsoga in the same concentration caused an increase of 105% in oxygen consumption.

Experiment No. 10.—Object: To determine the oxygen uptake by 1 and 2% Infusions of Galinsoga. No tissues were used in this experiment.

1.—1% Infusion of Galinsoga. 2.—Same. 3.—2% Infusion of Galinsoga. 4.—Same.

Results.—While the infusion in the quantities used in these experiments show little in the way of oxygen uptake: blank should always be run and proper corrections made.

7. Infusion of Digitalis apparently contains a principle which causes an increase in oxygen consumption.

8. This series of experiments suggest the possibility that studies of the influence of drugs on the oxidative processes in animal tissues to be measured by the use of a micro-respirometer might be the basis of the following investigations.

(*a*) The potency of principles in plant and animal drugs.

(*b*) The activity of the various fractions that occur during the investigative stages of drug extraction.

(*c*) The activity of various cardiac drugs on cardiac muscle and other tissues.

(*d*) The development of a method of biological assay for the standardization of the cardiac group of drugs.

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PHYTOCHEMICAL NOTES.*[1]

No. 112. PRELIMINARY CHEMICAL EXAMINATION OF CORYDALIS AUREA.

BY HAROLD EPPSON.

Thirty-five kilograms of air-dried herb collected in full bloom near Laramie, Wyoming, at an altitude of about 7400 ft. were percolated with alcohol in a Lloyd extractor, yielding 8920 Gm. of extractive, calculated on a moisture-free basis.

The alcoholic extract was extracted with petroleum ether, yielding an oily extract that weighed 1382 Gm. This was saponified with alcoholic KOH in the usual manner.

Isolation of Dimyristylcarbinol.—The saponified petroleum-ether extract was heated to remove the alcohol. Upon cooling a solid, waxy, yellow-red material formed on the surface. Additional similar material was obtained from the ether extract of the saponified fat. After repeated recrystallization from alcohol and methyl alcohol a light cream-colored material was obtained which melted at 81–82°. The acetylated product, after two recrystallizations from alcohol, melted at 44–45°. Elementary analyses yielded the following results:

	I.	II.	Computed for $C_{29}H_{58}O_2$.
C	79.4%	79.5%	79.3%
H	13.3%	13.4%	13.3%

Upon saponification the acetate yielded as saponification values, 124, 119 and 120, respectively. The regenerated alcohol, after recrystallization from both methyl and ethyl alcohol, melted at 81–82°. Elementary analyses yielded the following results:

	I.	II.	Computed for $C_{27}H_{56}O$.
C	81.6%	81.8%	81.7%
H	14.2%	14.2%	14.2%

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* Scientific Section, A. PH. A., Madison meeting, 1933.

[1] From the laboratory of Edward Kremers.

According to Kipping,[1] dimyristylcarbinol melts at 80.5–81° and its acetate at 45–45.5°. Sando[2] records the melting point of the alcohol at 81.5–82°.

The total amount of non-saponifiable material obtained by shaking the saponified mixture with ether amounted to 340 Gm.

The saponified fat, after removal of the non-saponifiable material, was treated with sulphuric acid to liberate the free fatty acids. The free acids were treated according to the Twitchel[3] method, with slight modifications and thereby separated into 180 Gm. of solid fatty acids and 234 Gm. of liquid fatty acids.

The main alcoholic extract after extraction with petroleum ether was diluted with water and acetic acid to about 33 liters, sufficient acetic acid being added to make it about one per cent acid. After standing for two and one-half days the precipitated resinous fraction, weighing about 540 Gm. air dry, was filtered off. The filtrate was made alkaline with ammonium hydroxide. A flocculent gray-green precipitate formed and was filtered off.

Alkaloid C.1.—This gray-green precipitate was extracted with ether while still moist. It was then dried somewhat and extracted with ether made alkaline with ammonium hydroxide. Upon standing in an open beaker, the ether extract deposited a mass of nodular crystals weighing 53.5 Gm., and colored green from contaminating chlorophyl.

By fractional crystallization 22 Gm. of alkaloid, m. p. 135–138° and 31 Gm. of alkaloid, m. p. 135–139° were obtained, called alkaloid C.1. This alkaloid is colorless in concentrated H_2SO_4 and gives immediate red color with concentrated HNO_3. It is optically active, $[\alpha]_D^{20}$ −265 (in chloroform or absolute alcohol). Upon recrystallization the m. p. was 138–140° and $[\alpha]_D^{25}$ −271. Determination of the methoxy groups gave 33.47 and 32.7 per cent, respectively.

Upon cooling the HI mixture from the methoxy determination a precipitate formed. This was filtered off and washed with water, giving a cream-colored powder, m. p. 278–280° with decomposition.

Alkaloid C.2.—The ammonium hydroxide precipitate after extraction with ether was dried and powdered and, further extracted with ether, made alkaline with ammonium hydroxide. This ether upon evaporation deposited some needle-like crystals of alkaloid C.2. These were recrystallized from alcohol when they formed as flat shiny plates, melting at 148–149°. They gave a yellow color instantly with concentrated HNO_3.

This alkaloid is optically inactive. The hydrochloride forms needles, recrystallized from hot water, melting at 238–239°. A methoxy determination run by the Hewitt and Moore modification of the Zeisel method gave 33.7 and 34 per cent, respectively. From the formula given below by Chou this shows the presence of four methoxyl groups. The demethylated product recovered from the HI reaction mixture formed a cream-colored crystalline precipitate, m. p. gradually darkens, decomposes 278–280°.

This alkaloid is probably the same as that isolated from *Corydalis aurea* by Heyl[4] and from *C. ambigua* by Chou.[5] Chou gives the formula as $C_{20}H_{23}O_4N$

[1] *J. Chem. Soc.*, 63, 459 (1893).
[2] *J. Biol. Chem.*, 56, 457 (1927).
[3] *Ind. Eng. Chem.*, 13, 806 (1921).
[4] *Apoth. Ztg.*, 25, 137 (1910).
[5] *Chinese J. Physiol.*, 2, 203 (1928); 3, 69 (1929).

and the melting point of the hydrochloride as 218°; acid oxalate, m. p. 208°; acid sulphate, m. p. 238° and neutral sulphate, m. p. 220°.

The filtrate from the ammonium hydroxide precipitate was extracted with ether. Upon standing a mixed mass of alkaloid crystals formed. From the mixed crystals a few large crystals were separated out mechanically. These weighed 6 Gm. and melted partially at 100° and finally at 140–142°, with a rotation of $[\alpha]_D^{25}$ −272. They are probably the same as C.1.

The remainder of the mixed crystal mass, weighing 30 Gm. was treated with hot 95 per cent alcohol which dissolved out the clear crystals and left the round opaque nodules (D.2.).

Alkaloid D.2.—These insoluble nodules weighed 10 Gm., m. p. 197–198°. Recrystallized from chloroform-alcohol they melted at 200–202°. The chloroformic solution was yellow with a green fluorescence. The acid oxalate forms prisms, m. p. 242–243°. This alkaloid is optically inactive and contains no methoxy groups. It is similar to Corydalis C isolated from *C. ambigua* by Chou and which he compares to protopine.

The alcoholic solution from which the insoluble alkaloid D.2. had been filtered did not form any crystals upon standing. After solution in acid and precipitation with alkali the alkaloidal material was dissolved in alcohol and treated with charcoal. After standing several weeks some large crystals formed. These crystals melted at 140–142°. They have an optical rotation of $[\alpha]_D^{28}$ −275. The hydrochloride forms columns from hot water, m. p. 260°. A methoxy determination gave 32.7 per cent methoxy groups. This alkaloid is very similar if not identical with alkaloid C.1.

AN ATTEMPT TO KETONIZE ERGOSTEROL.*[1]

BY E. MONESS AND W. G. CHRISTIANSEN.

At the Indianapolis meeting of the American Chemical Society in March 1931, Dr. Bills reported on the heat of combustion of ergosterol. From his work he concludes that in the activation of ergosterol there is no absorption of energy, but that the activation depends upon chemical isomerization.

It is known that ergosterol has a complex molecule, part of which is alicyclic and contains an alcoholic hydroxyl group and an ethylenic linkage. Aliphatic ketones are capable of existing in an enolic form, and in some instances the compound is a mixture of the keto and enol forms. The extent to which the compound exists either as the keto or enol form is dependent upon the structure of the compound. Acetyl acetone may be used as an example:

$$CH_3C(=O)-CH_2-C(=O)-CH_3 \rightleftharpoons CH_3C(=O)-CH=C(OH)-CH_3$$

When a compound is capable of reacting in both the keto and enol forms it will react entirely in accordance with the ketonic structure or entirely in accordance with the enolic structure, depending on the particular reaction which is being ap-

* Scientific Section, A. PH. A., Washington meeting, 1935. [1] Research Department of the Chemical and Pharmaceutical Laboratories, E. R. Squibb and Sons, Brooklyn, N. Y.

plied. Ergosterol is known in its enolic form but as yet there is no evidence of its existence in the keto form.

If it is true that the activation of ergosterol by ultraviolet light depends upon a chemical isomerization, and if ergosterol could be made to form a keto isomer, such rearrangement should result in a substance possessing anti-rachitic activity, or capable of being activated. The simplest reagent which reacts specifically with ketones is hydroxylamine, and this substance was therefore used in an attempt to form the oxime of ergosterol. We realized, of course, that a possible keto-enol isomerization might not be the explanation of the activation of ergosterol, but in view of Dr. Bills' conclusion that activation is due to chemical isomerization, and in view of the fact that keto-enol isomerism is here theoretically possible, it was of sufficient interest to warrant investigation.

In carrying out the actual experiment we subjected ergosterol to a reaction with hydroxylamine under conditions which were known to give an almost quantitative yield in the formation of the oxime of cyclohexanone. Ergosterol, however, failed to react and was recovered unchanged from the reaction mixture.

EXPERIMENTAL.

First, we repeated the work of Bayer (1) in the preparation of the oxime of cyclohexanone, in order to make certain that the conditions of the work were such as to insure a nearly quantitative yield of the oxime. We then proceeded to react ergosterol with hydroxylamine, under the same conditions, as follows:

1.152 Gm. of pure ergosterol, m. p. 158° C., were dissolved in 40 cc. of boiling absolute alcohol under reflux. To this solution was added 0.4 Gm. (2 mols.) of hydroxylamine hydrochloride, and 0.6 Gm. (slightly more than 2 mols.) of sodium bicarbonate. The mixture was refluxed for 3 hours. It was then evaporated to dryness and extracted with ether. The ether extract was evaporated to dryness, yielding 0.8 Gm. of a white substance having a melting point of 157° C. We had thus recovered most of our ergosterol in an unchanged condition.

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OPENING OF THE LEXINGTON FEDERAL NARCOTIC FARM.

The first United States Narcotic Farm, near Lexington, Ky., will open for the reception for admissions on or about May 1st. According to the *Journal A. M. A.*, of February 16th, it will accommodate a maximum of 1000 persons and is designed to accommodate males only. Its object and purposes are to rehabilitate, restore to health and train to be self-supporting and self-reliant those who are admitted thereto. The control, management and discipline are to be maintained for the safekeeping of the individual and the protection of the community. Experiments are to be carried on to determine the best methods of treatment and research in this field, and the results disseminated to the medical profession and the general public to the end that states may make some provision for establishing a similar policy for helping to solve the problem of drug addiction. The function of the institution at Lexington therefore assumes the character of a treatment and research center and of an educational and rehabilitation center with certain custodial features superimposed.

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(*Concluded on page 167.*)

ADSORPTION OF STRYCHNINE SULPHATE BY VARIOUS CHARCOALS AND BY LLOYD'S REAGENT.[1]

BY JOHN F. SUCHY[2] AND R. V. RICE.

In various phases of industry charcoal ranging from the crude technical product to the highly activated form finds much practical application. The pharmacist in his field is often called upon to use charcoal either as a filtering or as an adsorbent medium and as a rule but little consideration is given to the amount of active medicinal ingredient which may be lost in the process. It is also of interest to know relatively the adsorbing power of these filtering media.

The present research was undertaken to gain some information as to the diminution of potency of strychnine sulphate solutions when brought in contact with a number of commercial charcoals and with Lloyd's Reagent. The results obtained show relatively the adsorbing powers of these media with respect to almost any dissolved substance (1).

EXPERIMENTAL.

Identical procedures were followed in all cases to show the variation of adsorption of strychnine sulphate by the various adsorbing media. Groups of from five to ten samples were run together, each sample representing a different concentration of strychnine sulphate.

The following procedure was employed:

Exactly one Gm. of adsorbent was weighed out and a calculated quantity of strychnine sulphate added. To this was added exactly 100 cc. of distilled water and the mixture tightly stoppered and warmed on a steam-bath until solution of the alkaloidal salt was effected. Each flask was then cooled to 25° C. and allowed to stand for 24 hours in a wall case where the variation of temperature was not over 2 degrees. The contents were shaken frequently to aid in reaching equilibrium. After the proper time interval, the mixtures were filtered and a 25-cc. portion of each was pipetted into a separatory funnel. The solution in each case was made alkaline with 5 cc. of 10 per cent ammonia and allowed to stand a short time until completion of precipitation. The strychnine was then entirely extracted with chloroform, the latter being added in small portions. Each chloroformic solution was filtered into a tared beaker which was then placed in a 50-degree oven where the solvent was evaporated. The residue was finally dried in another oven at 100° C. for about 30 minutes, weighed and calculated as the sulphate. The difference between this result and the original weight of the sulphate gave the amount of the latter adsorbed per Gm. of charcoal.

Each sample of the strychnine salt used in this study was assayed by dissolving a carefully weighed quantity in water, making the solution alkaline with ammonia, and extracting the resulting alkaloid with chloroform. The strychnine thus obtained was calculated as the sulphate. Any deviation from the pure salt was taken into consideration in all subsequent determinations.

In order to obtain an idea of the amount of strychnine sulphate adsorbed by the filter paper used in the process, a series of blank determinations was run, the charcoal being omitted. The other details of the procedure were identical. The results obtained showed such small deviations from no adsorption that any loss due to this factor was neglected.

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[1] This article is based on a dissertation by R. V. Rice presented in partial fulfilment of the degree of Master of Science at the University of Montana, 1934.

[2] Professor of Pharmacy, University of Montana.

DISCUSSION.

I. Solvent—Water. Time—24 Hours.—Seven different charcoals and Lloyd's Reagent were used in this investigation. Charcoals designated by number are activated forms sold on the market to-day.

By plotting the original concentration of strychnine sulphate against the amount adsorbed per Gm. of charcoal, an isotherm was obtained in each case as is shown in Figs. 1 and 2 which represent the adsorption efficiency.

Charcoal No. 1 proved by far the best adsorbent of the group, adsorption being complete up to a concentration of nearly 5 Gm. per L. None of the other charcoals used showed total adsorption beyond concentrations of 2 Gm. per L. On the other hand, willow charcoal (Curve No. 7), the type used in most pharmaceutical operations, proved by far the poorest adsorbent of the group, taking up only 11 per cent of the salt when the original concentration was but 1 Gm. per L.

Bone black (Curve No. 6) showed a surprisingly high adsorbing power. Like the willow charcoal there was no finite concentration at which total adsorption took place, but the percentage of adsorption dropped much less rapidly with increasing concentrations.

The other carbons used proved intermediate in their affinity for the alkaloidal salt. No. 2 and No. 4 gave total adsorption in concentrations to almost 2 Gm. per L., while No. 3 and No. 5 adsorbed completely up to about 1 Gm. per L. Lloyd's Reagent (Curve No. 8) also proved an intermediate adsorbent but differed from the others in that the percentage adsorbed at higher concentrations fell much less rapidly.

In order to make a direct comparison of the adsorption efficiency of each charcoal in the different concentrations, the results were tabulated to show the per cent of strychnine sulphate adsorbed. These results are shown in Table I.

TABLE I.—PER CENT OF STRYCHNINE SULPHATE ADSORBED.

	Concentration—Gm. per L.									
Adsorbent.	1.	2.	3.	4.	5.	6.	7.	8.	10.	12.
Charcoal No. 1	100	100	100	100	97.7	89.0	77.9	69.0	56.1	47.1
Charcoal No. 2	100	94.5	76.3	62.6	52.0	44.2	38.9	34.4	28.8	25.9
Charcoal No. 3	100	95.5	80.4	69.3	60.1	51.7	44.7	39.2	31.5	26.4
Charcoal No. 4	100	89.0	66.3	51.9	41.9	35.2	30.3	26.5	21.7	18.5
Charcoal No. 5	94.0	75.6	63.3	54.5	48.0	42.8	38.4	34.6	28.6	24.0
Bone black	36.3	36.0	35.4	34.7	33.5	31.7	29.8	27.9	24.7	21.6
Lloyd's Reagent	100	83.2	75.4	65.2	55.5	49.0	43.7	39.3	33.2	28.3
Willow charcoal	11.0	10.3	10.0	7.8	6.3	5.3	4.5	3.8	3.2	2.6

II. Langmuir's Equation.—Langmuir's equation for the expression of adsorption isotherms has been found in most cases to hold more nearly true over wider ranges of concentration than does Freundlich's equation (2).

These equations are:

1. Langmuir's equation, $\frac{C}{Q} = \frac{1}{ab} + \frac{C}{b}$, where C is the original concentration, Q is the quantity adsorbed and a and b are constants.

2. Freundlich's equation, $\left(\frac{x}{m}\right)^n = kc$, where x is the amount adsorbed, m is the weight of adsorbent and c is the original concentration, k and n being constants.

By plotting logarithms of the values of x/m against c of Freundlich's equation a straight line results if the original curve obtained by plotting x/m against c proves

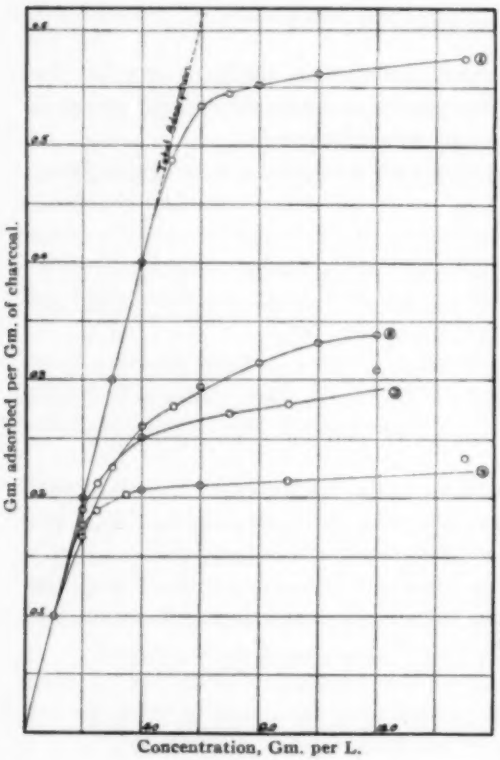


Fig. 1.

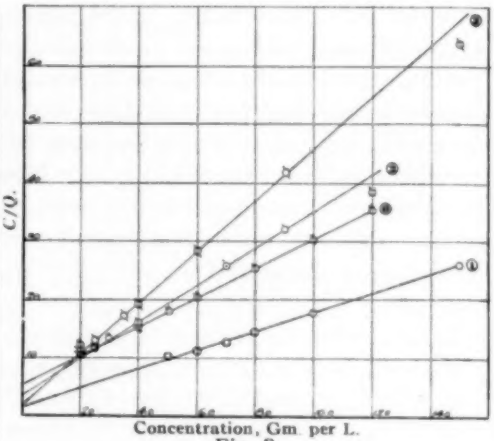
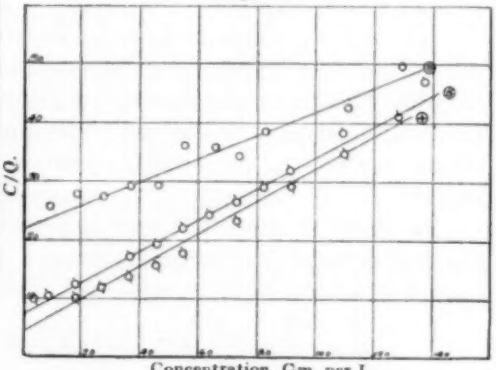


Fig. 3.



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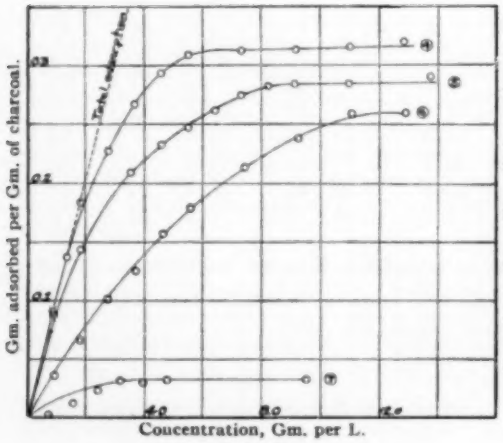

Fig. 2.

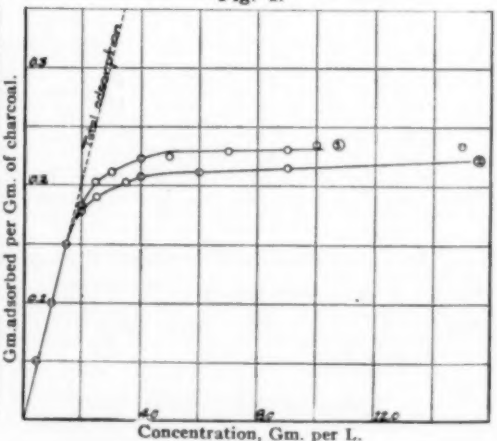

Fig. 5.

to be a parabola (3). As can be seen by inspection of the isotherms of Figs. 1 and 2, none of these curves is by any means perfect parabolas, hence Freundlich's equation is not suitable for the expression of these isotherms.

On the other hand the plotting of C/Q against C of Langmuir's equation gives a near straight line in most of the cases tried. The plots of these values are shown in Figs. 3 and 4. It was found that the sample of willow charcoal used yielded such extremely high values for C/Q that plotting of its curve in these figures was impossible. The large variation also obtained in the values of C/Q indicates that this equation does not represent the isotherm very satisfactorily. All the other curves conform quite well to the equation as shown by the figures (see Figs. 3 and 4: Curve 6—bone black; Curve 8—Lloyd's Reagent).

TABLE II.—CONSTANTS OF LANGMUIR'S EQUATION.

Charcoal.	*a*.	*b*.
No. 1	1.154	0.610
No. 2	0.144	0.336
No. 3	1.969	0.231
No. 4	0.329	0.483
No. 5	0.318	0.393
Bone black	0.062	0.734
Lloyd's Reagent	0.455	0.400

The constants a and b of Langmuir's equation were calculated for each carbon by plotting the curves of Figs. 3 and 4 on quite a large scale in order to obtain the slope of the lines and their Y-intercepts more accurately. These values are shown in Table II.

III. Solvent—Water. Time—48 Hours.—The same procedure employed in the preceding 24-hour determinations was followed in this case, with the exception that the period of contact was prolonged to 48 hours. Isotherms were determined for Charcoal No. 1 and Charcoal No. 3.

Charcoal No. 1 gave an isotherm identical with the one obtained in the shorter period of contact. This means that equilibrium must have been reached between the adsorbent and the strychnine sulphate solution within 24 hours of contact and this equilibrium was permanent for at least an additional 24 hours.

Charcoal No. 3 on the other hand adsorbed more alkaloid when left in contact with the solution for 48 hours than it did in the shorter period of time. The results indicate that it takes more than 24 hours for Charcoal No. 3 and strychnine sulphate solution to reach adsorption equilibrium. The 48-hour curve in this instance probably represents the equilibrium but no determina-

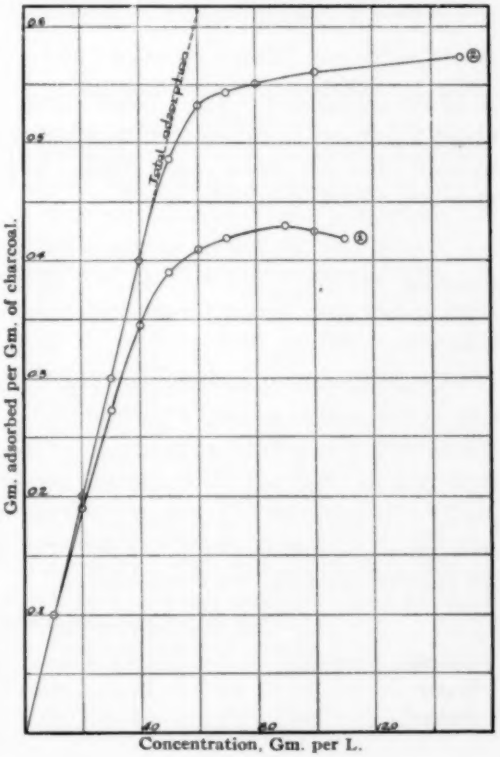

Fig. 6.

tion involving a longer period of time was run to prove this presumption. Curve 1 of Fig. 5 is the 48-hour isotherm while Curve 2 is the result obtained in the shorter period of contact.

IV. Solvent—Alcohol. Time—24 Hours.—The amount of adsorption is dependent upon the surface tension of the solvent (4); hence the use of alcohol in place of water should give a different isotherm when all the other factors are constant.

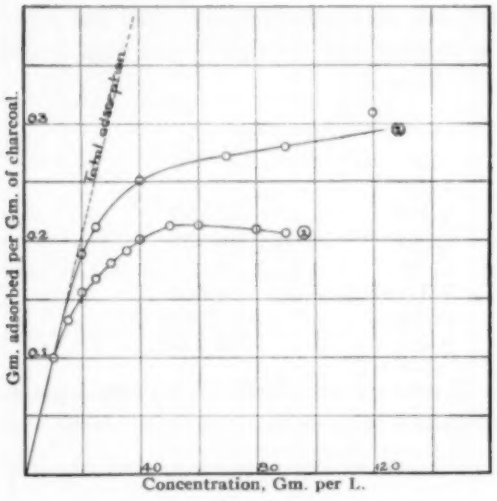

Fig. 7.

The effects of such a change were determined in the cases of Charcoals No. 1 and No. 2, using commercial alcohol sp. gr. 0.810 at 26° C. which corresponds to about 94 per cent by volume.

Figure 6 shows the results secured by use of Charcoal No. 1, Curve 1 with alcohol and Curve 2 with water. A marked drop in adsorption is evidenced in the alcohol solution, showing total adsorption to a concentration of only 1.5 Gm. per L. of alkaloidal salt. The alcohol curve also shows a maximum of adsorption at about 9 Gm. per L. concentration, whereas the water curve rises slowly but steadily upward after the usual sharp bend. Table III gives a direct comparison of the amounts adsorbed in each case.

TABLE III.—PER CENT ADSORBED BY CHARCOAL NO. 1.

	Concentration—Gm. per L.								
Solvent.	1.	2.	3.	4.	5.	6.	7.	8.	10.
Water	100	100	100	100	97.7	89.0	77.9	69.0	56.1
Alcohol	100	95.2	90.9	86.2	78.1	68.2	59.9	53.3	42.6

Charcoal No. 2 with alcohol (Fig. 7, Curve 1), shows the same type of diminution in adsorption as does Charcoal No. 1. The highest point of total adsorption occurs at a concentration of about 1 Gm. per L. This point is somewhat lower than that of Charcoal No. 1 and the maximum of the curve occurs at about 6 Gm. per L. concentration in contrast to 9 Gm. per L. concentration in the case of Charcoal No. 1. Table IV presents a direct comparison of quantities adsorbed at different concentrations in the two solvents.

TABLE IV.—PER CENT ADSORBED BY CHARCOAL NO. 2.

	Concentration—Gm. per L.								
Solvent.	1.	2.	3.	4.	5.	6.	7.	8.	10.
Water	100	94.5	76.3	62.6	52.0	44.2	38.9	34.4	28.8
Alcohol	100	78.0	61.5	50.3	42.5	35.7	30.4	25.3	20.2

SUMMARY.

1. The media studied vary widely in their ability to adsorb strychnine sulphate.

2. One charcoal was found to require more than 24 hours to reach an equilibrium of adsorption.

3. Langmuir's equation represents the adsorption curves better than does Freundlich's equation.

4. The ability of Charcoals No. 1 and No. 2 to adsorb strychnine sulphate from solution is less when the salt is dissolved in alcohol than when it is dissolved in water.

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THE STABILIZATION OF SOLUTION OF IRON AND AMMONIUM ACETATE, U. S. P. X.[1]

BY WILLIAM J. HUSA[2] AND LYELL J. KLOTZ.

Husa and Birmingham (1) found that the stability of Solution of Iron and Ammonium Acetate is affected by various factors such as light, heat and variations in the proportions of the ingredients. In the present investigation, further experimentation was undertaken with a view toward increasing the stability of Solution of Iron and Ammonium Acetate, commonly known as Basham's Mixture.

Order of Mixing.—In the preparation of colloidal solutions, the order of mixing is often an important factor in the stability of the finished product, particularly when substances capable of acting as protective colloids are present. Birmingham (2) prepared Basham's Mixture by 12 different orders of mixing and stored the resulting preparations under three conditions, *i. e.*, sunlight, darkness and diffused light. Order of mixing appeared to have no effect upon the stability, except in a few cases of diffused light.

Since the tests carried out by Birmingham in diffused light gave some indication that order of mixing might be a factor to consider, further tests were carried out on this point. The materials used were of U. S. P. grade, the ammonium carbonate assaying 31.2% ammonia and the diluted acetic acid being adjusted to 6.0%. Solutions were prepared by two methods: (*a*) hand mixing, shaking well after the addition of each ingredient, and (*b*) mechanical mixing, adding each ingredient drop by drop from a burette into a beaker fitted with an electric stirrer, five minutes being allowed after the final addition of each ingredient and efficient mechanical stirring being maintained throughout the process.

In order to designate the orders of mixing concisely, the following numbers are assigned to the various ingredients:

1. Solution of Ammonium Acetate.
2. Diluted Acetic Acid.
3. Tincture of Ferric Chloride.
4. Aromatic Elixir.
5. Glycerin.
6. Water.

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[1] Section on Practical Pharmacy and Dispensing, A. PH. A., Washington meeting, 1934.

[2] Head Professor of Pharmacy, University of Florida.

The orders of mixing were as follows, certain ingredients being omitted in some cases as indicated:

MECHANICAL AGITATION.

1 + 2 + 3 + 4 + 5 + 6; 3 + 5 + 4 + 1 + 2 + 6; 3 + 5 + 4 + 2 + 1 + 6; 3 + 5 + 2 + 1 + 4 + 6; 3 + 5 + 1 + 2 + 4 + 6; 3 + 1 + 2 + 5 + 4 + 6; 1 + 5 + 3 + 2 4 + 6; 1 + 3 + 2 + 5 + 4 + 6; 1 + 2 + 5 + 4 + 3 + 6; 3 + 4 + 1 + 2 + 5 + 6; 3 + 4 + 2 + 1 + 5 + 6; 1 + 3 + 4 + 5 + 6 (2 omitted); 1 + 3 + 5 + 4 + 6.

HAND AGITATION.

1 + 2 + 3 + 4 + 5 + 6; 1 + 3 + 5 + 4 + 6 (2 omitted).

The solutions were stored under various conditions, 25-cc. portions being placed in 1-oz. prescription bottles. The solutions were observed daily for evidences of precipitation.

TABLE I.—THE EFFECT OF VARIOUS CONCENTRATIONS OF DILUTED ACETIC ACID ON THE STABILITY OF SOLUTION IRON AND AMMONIUM ACETATE.

Diluted Acetic Acid.	Time of Ppt., Days.	Diluted Acetic Acid.	Time of Ppt., Days.
0% (*s*)	9	8% (*s*)	19
0%	9	8%	19
2% (*s*)	11	12% (*s*)	51
2%	11	12%	52
4% (*s*)	11	18% (*s*)	*
4%	11	18%	*
6% (*s*)	14		
6%	14		

* Did not precipitate during the test period of 60 days.

Mechanically mixed samples following the U. S. P. X order of mixing precipitated in 22 days in diffused light and in 29 days in darkness; hand-mixed samples precipitated after practically the same interval. The samples prepared by various other orders of mixing precipitated in 13 to 26 days in diffused light and in 18 to 31 days in darkness. Since differences of a few days might be attributed to experimental error and in any case would not be of much practical significance, it may be safely concluded that the variations in order of mixing showed no advantage over the U. S. P. method. It is further evident that mechanical mixing offers no advantage over hand mixing as far as stability is concerned. Samples of all the above solutions were also stored in a refrigerator at about 6° C.; after 18 months, all the samples were still perfectly free from precipitation. It is thus apparent that storage of the solution at refrigerator temperature constitutes an excellent method of avoiding the troublesome deterioration.

Effect of Various Concentrations of Acetic Acid.—Samples of Solution of Iron and Ammonium Acetate were prepared containing 0%, 2%, 4%, 6%, 8%, 12% and 18% of Diluted Acetic Acid in the finished preparation. Two 30-cc. portions of each sample were placed in 4-oz. prescription bottles in diffused light. One sample was shaken daily and the other allowed to remain undisturbed. Table I shows the time of precipitation of these solutions. Samples marked (*s*) were shaken daily.

It was concluded from the data in Table I, that the time of precipitation is inversely proportional to the quantity of acetic acid present, and that daily agitation has no effect upon the time of precipitate formation.

Effect of Addition of Alkali.—Specified quantities of a normal solution of sodium hydroxide were added to samples of Solution of Iron and Ammonium Acetate before diluting the mixture to volume with distilled water. Samples were stored in diffused light. Data are shown in Table II.

TABLE II.—THE EFFECT OF ADDITION OF ALKALI UPON THE STABILITY OF SOLUTION OF IRON AND AMMONIUM ACETATE.

N Alkali in Solution.	Time of Ppt., Days.	N Alkali in Solution.	Time of Ppt., Days.
0.5% (*s*)	7	5.0% (*s*)	9–27*
0.5%	7	5.0%	10–29*
1.0% (*s*)	6	10.0% (*s*)	**
1.0%	6	10.0%	**
2.0% (*s*)	5		
2.0%	7		

* Precipitated at the end of 9 and 10 days, respectively; the precipitate redissolved within a few hours and did not reappear until the expiration of 27 and 29 days, respectively.

** Did not precipitate during the test period of 60 days.

It was concluded from the data in Table II, that additions of alkali in concentrations of 5% or more of normal solution exert a stabilizing influence upon this preparation. This observation is in accord with theory in that it is well known that ferric hydroxide is more readily peptized in neutral or alkaline than in acid media (3).

Effect of Concentration of Ingredients.—Husa and Birmingham (1) have shown that an increase in the concentration of certain ingredients resulted in increased stability of Solution of Iron and Ammonium Acetate. Walter Taylor (4) stated that a double strength preparation is stable, his statement being based upon the U. S. P. formula of 1890. Although the present U. S. P. formula cannot be doubled in strength by the use of the ingredients contained, it is possible to perform the concentration by substituting the proper amount of acetic acid or glacial acetic acid for the required quantity of Diluted Acetic Acid.

In order to determine the stability of a preparation made exactly twice as strong as the present official solution, samples of solution were prepared according to the following formula:

Solution of Iron and Ammonium Acetate.

Tincture of Ferric Chloride	80 cc.
Glacial Acetic Acid	65 cc.
Ammonium Carbonate	50 Gm.
Aromatic Elixir	240 cc.
Glycerin	240 cc.
Distilled Water, *q. s.*	1000 cc.

Mix the glacial acetic acid with 350 cc. of distilled water and to this mixture, gradually add the ammonium carbonate. After effervescence has ceased, add, successively, the tincture of ferric chloride, the aromatic elixir, and the glycerin, and lastly, enough distilled water to make the product measure 1000 cc.

This solution was then stored under the usual conditions in 1-oz. prescription bottles, portions of the solutions also being placed in the electric oven at approximately 50° C. In addition, 8-oz. bottles of the concentrated preparation were stored under the usual conditions and at the end of each month, 1 fl. oz. of the concentrate was diluted with an equal volume of distilled water and stored for comparison with a control sample. Data follow in Table III.

TABLE III.—THE EFFECT OF DOUBLING THE CONCENTRATION OF ALL INGREDIENTS IN SOLUTION OF IRON AND AMMONIUM ACETATE.

	No. of Days before Ppt. Occurred.			
Sample.	Sunlight.	Diffused Light.	Darkness.	Oven.
U. S. P. Control	5	55	60	1
Concentrate	26	No ppt. 6 months	No ppt. 6 months	10

In addition, samples prepared by diluting the concentrate were fully as stable as freshly prepared control specimens, no difference being observed in any case between the times of precipitation.

It was concluded from the data in Table III, that a stable preparation can be prepared by doubling the quantities of active ingredients in Solution of Iron and Ammonium Acetate.

SUMMARY.

1. The deterioration of Basham's Mixture may be avoided by storing the solution at refrigerator temperature.

2. Basham's Mixture is very stable when prepared double strength; this concentrated preparation may be diluted to double its volume with distilled water just before it is dispensed.

3. The stability of Basham's Mixture may be improved by increasing the proportion of acetic acid or by the addition of alkali, but since these changes would alter the product somewhat, they are not considered as practical as the methods listed under 1 and 2.

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ANALYSIS OF MAGNESIUM CARBONATE.*

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Samples of Magnesium Carbonate were obtained from eight sources. These were subjected to routine analysis to discover how closely they compared, particularly as to MgO content and to find out how wide a range existed. Also to

* Section on Practical Pharmacy and Dispensing, A. PH. A., Washington meeting, 1934.

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discover if the various samples conformed to the U. S. P. requirement as to limit of CaO. The results of the analysis are given in the following table:

TABLE I.

Samples.	% MgO.	% CO_2.	% H_2O.	% Al and Fe.		% CaO.
1	41.89	29.70	27.52	T	T	0.51
2	46.90	39.50	12.00	T	T	0.58
3	46.90	36.30	16.00	T	T	0.50
4	42.08	35.50	22.10	T	T	0.16
5	43.90	35.80	20.00	T	T	0.01
6	48.50	39.60	11.20	T	T	0.42
7	41.80	36.95	20.12	T	T	0.43
8	48.35	36.44	14.30	T	T	0.41

As shown in Table I, the samples analyzed have an MgO content ranging from 41.80% to 48.50% while the CaO content for all samples is well within the limit (0.80%) set by the U. S. P. X. The Al and Fe contents are negligible.

The foregoing results are of interest and importance when we consider the U. S. P. X formula for Solution of Magnesium Citrate:

Magnesium Carbonate	15.00 Gm.
Citric Acid	35.00 Gm.
Syrup	60.00 cc.
Purified Talc	5.00 Gm.
Oil of Lemon	0.10 cc.
Potassium Bicarbonate	2.50 Gm.
or, Sodium Bicarbonate	2.10 Gm.
Distilled Water, a sufficient quantity to make	350.00 cc.

On the basis of the following equations we can compute the quantity of Citric Acid to be used in the preparation of Solution of Magnesium Citrate, assuming that we wish to obtain $MgHC_6H_5O_7$ as the active agent in the finished solution.

(A) $\underset{40.32}{MgO} + \underset{210.11}{H_3C_6H_5O_7.H_2O} = MgHC_6H_5O_7 + 2H_2O.$

(B) $\underset{200.22}{2KHCO_3} + \underset{210.11}{H_3C_6H_5O_7.H_2O} = K_2HC_6H_5O_7 + 3H_2O.$

(C) $\underset{168.02}{2NaHCO_3} + \underset{210.11}{H_3C_6H_5O_7.H_2O} = Na_2HC_6H_5O_7 + 3H_2O.$

Thus, by using the calculated factors the amount of Citric Acid necessary for a given sample of Magnesium Carbonate can easily be computed.

(A) $\frac{210.11}{40.32} = 5.2110$ factor for MgO.

(B) $\frac{210.11}{200.22} = 1.0493$ factor for $KHCO_3$.

(C) $\frac{210.11}{168.02} = 1.2505$ factor for $NaHCO_3$

EXAMPLE: For a Magnesium Carbonate of 48.5% MgO content:
$15 \times 0.485 \times 5.211 = 37.91$ Gm. $H_3C_6H_5O_7.H_2O$ is required.

The following table shows the results of similar calculations applied to all samples analyzed; also the total amount of $H_3C_6H_5O_7.H_2O$ required for both Magnesium Carbonate and $NaHCO_3$ or $KHCO_3$. The amount necessary for the latter two substances is, of course, a constant, *i. e.*, 2.62 Gm.

TABLE II.

Sample No.	Amount of $H_3C_6H_5O_7.H_2O$ for Magnesium Carbonate, Gm.	Amount $H_3C_6H_5O_7.H_2O$ Required for Either $KHCO_3$ or $NaHCO_3$, Gm.	Total Amount Required, Gm.
1	32.74	2.62	35.36
2	36.66	2.62	39.28
3	36.66	2.62	39.28
4	32.89	2.62	35.51
5	34.31	2.62	36.93
6	37.91	2.62	40.53
7	32.67	2.62	35.29
8	37.79	2.62	40.41

Table II reveals: (*a*) that for all of the samples analyzed the amount of Citric Acid in the U. S. P. formula is insufficient, assuming, of course, that $MgHC_6H_5O_7$ and either $K_2HC_6H_5O_7$ or $Na_2HC_6H_5O_7$ are desired as reaction products; (*b*) that in some cases, *i. e.* (2, 3, 6 and 8), the insufficiency is quite appreciable.

The results also assume $NaHCO_3$ and $KHCO_3$ as 100% pure, which, of course, is not true. The totals are, therefore, close approximations. No provision has been made for the slight amount of CaO.

It would seem then that the formula for Solution of Magnesium Citrate should be more flexible, *i. e.*, provide for varying proportions of Citric Acid proportional to the MgO content of the Magnesium Carbonate used.

It is well known that Solution of Magnesium Citrate precipitates upon standing. As one chemist recently stated, "Some batches have stood up for three years; others have precipitated in three weeks."

Pasteurization at 60° C. for one hour retards precipitation, but does not prevent it. Possibly better dispersion is thus effected.

It is logical to believe that when Magnesium Carbonate, high in MgO is used, precipitation will take place more quickly and in greater quantity.

It would be good Pharmacy to first analyze the Magnesium Carbonate, calculate the amount of $H_3C_6H_5O_7.H_2O$ necessary, and then *q. s.* to a volume such that the preparation will contain just slightly more than 1.5 Gm. MgO per 100 cc.

A product more uniform from the standpoint of chemical composition (qualitatively and quantitatively) and physiological action would thus be obtained.

A SUGGESTED FORMULA FOR WHITE LINIMENT.*

BY LAWRENCE H. BALDINGER.

From time to time different formulas have appeared in the pharmacy journals for a product known commonly as *White Liniment.* This liniment should not be confused with *Linimentum Terebinthinæ Aceticum, N. F. V,* known also as *Linimentum Album.* The *White Liniments* being manufactured by a number of pharmaceutical houses at present appear to be stable emulsions of fixed oils in which suitable stimulants and rubefacients have been dissolved.

White Liniment is often prepared extemporaneously by the pharmacist according to the following formula:

* Section on Practical Pharmacy and Dispensing, Washington meeting, 1934.

Ammonia Water.
Olive Oil.
Oil of Turpentine, āā, aequales partes.

The resulting product, however, separates on standing, especially if the olive oil is neutral, and it has been suggested (1) that two drachms of oleic acid be added to make a non-separable mixture, and that camphor or opium may be added to enhance the value of the liniment. Newman (2) has suggested a similar formula in which neatsfoot and cottonseed oils have been substituted for olive oil. Other formulas (3), (4), (5), (6) which are more suitable in the preparation of a stock *White Liniment* include the following ingredients in varying amounts: ammonium carbonate, camphor, oil of turpentine, oil of origanum, castile soap, soft soap, cottonseed oil and alcohol.

In the preparation of *Ammonia Liniment, N. F. V*, which, for all practical purposes, is a *White Liniment* without some of the rubefacient ingredients, several suggestions have been made to insure a homogeneous and permanent emulsion of creamy consistency. Raubenheimer's suggestions (7) have been adopted in part by the N. F. V Revision Committee in that sesame oil is used in *Ammonia Liniment*. Latham (8) has proposed the use of paraffin oil, oleic acid and ammonia water as ingredients for *Ammonia Liniment*.

White Liniment is essentially an oil-in-water emulsion, the emulsification being brought about by a small amount of ammonium soap in the mixture. This soap is either added as such or is produced in the mixture by a reaction between the ammonia water and some fatty acid present in the fixed oil. It is thus apparent, as pointed out by Kyser and Velbrandt (9), that a stable emulsion cannot be formed if the fixed oil is neutral or if no soap is added. These authors have stated that as the percentage of fatty acid increases up to a certain point, the emulsion improves, but becomes too viscous when the fatty acid content is high. They have recommended that fixed oils should be standardized with respect to percentage of free fatty acids. Shulze (10) has also stated from observation that some free fatty acid in oils appears to be necessary for the preparation of emulsions.

The "whiteness" of *White Liniment* is dependent upon the saponified fat present in the preparation, and upon the minuteness of the oil globules dispersed in the oil phase. Without the use of a colloid mill or a homogenizer, it would be difficult to make a permanent, non-separating liniment. It has been suggested (7), (11) that sufficient alcohol be added to reduce the density of the outer phase to that of the oil phase, or to use glycerin for increasing the viscosity of the emulsion. Neither suggestion seems to have been adopted.

A few years ago, the Carbide and Carbon Chemicals Corporation (12) introduced a new synthetic organic chemical, triethanolamine. The commercial product is a colorless liquid of faintly ammoniacal odor and great hygroscopicity. It is less alkaline than ammonia, not harmful to textiles, not caustic to the skin. Recently the Council on Pharmacy and Chemistry of the American Medical Association (13) accepted for admission to New and Nonofficial Remedies triethanolamine-crude. The report of the Council in part is as follows:

"Triethanolamine-crude is an excellent emulsifying agent for use in the preparation of ointments and other dermatologic medicaments. . . . . it combines with fatty acids to form soaps with

good detergent properties, which are soluble not only in water but also in gasoline, kerosene and oils. It is claimed to have the power of increasing the penetration of oily substances and to possess a certain amount of bacteriostatic action."

For the preparation of *White Liniment* the following formula was used. The amount of stimulants and rubifacients may be varied to suit the compounder.

WHITE LINIMENT.

Cottonseed Oil	220 Gm.
Oleic Acid	25 Gm.
Triethanolamine	5 Gm.
Camphor	9 Gm.
Oil of Turpentine	40 cc.
Stronger Ammonia Water	25 cc.
Distilled Water *q. s. ad*	500 cc.

To the cottonseed oil, in which is dissolved the camphor, add the oleic acid and triethanolamine, and stir vigorously, preferably with a motor stirrer. Add the oil of turpentine and continue stirring until the mixture is homogeneous. Then slowly add with constant stirring about one-half the required amount of water. Stir until a thick creamy emulsion is formed. Add the stronger ammonia water and enough distilled water to complete the required volume.

This product may show a tendency to separate, particularly if diluted to a high degree with water. The product, however, can be restored to the original state by gentle shaking.

In an attempt to simplify the preparation of this product in small quantities the formula and procedure were modified slightly as follows: The camphor and cottonseed oil were replaced by an equal weight of *Camphor Liniment U. S. P.*, and the ingredients were placed in a dry bottle and vigorously shaken to form the emulsion. The resulting product indicated that the bottle method is to be preferred in the preparation of smaller amounts of liniment.

CONCLUSION.

1. Triethanolamine-crude, N. N. R., has been suggested as an emulsifying agent in the preparation of *White Liniment.*

2. Both the stirrer method and the bottle method have been proposed for making this emulsion.

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(2) Newman, *Ibid.*, 29, 136 (1915).
(3) Anon., *National Druggist*, 54, 236 (1924).
(4) Anon., *Bulletin of Pharmacy*, 21, 440 (1907).
(5) Anon., *Ibid.*, 29, 48, 538 (1915).
(6) Anon., *Merck's Report*, 11, 69 (1901).
(7) Raubenheimer, *Bulletin of Pharmacy*, 22, 391 (1908); Proceedings of the A. PH. A., 56, 1030 (1908).
(8) Latham, JOUR. A. PH. A., 3, 234 (1914).
(9) Kyser and Velbrandt, *Ibid.*, 13, 433 (1924).
(10) Schulze, *Apoth. Ztg.*, 46, 391 (1931).
(11) Anon., *National Druggist*, 59, 68 (1929).
(12) "Emulsions," The Carbide and Carbon Chemicals Corp., New York, July, 1933.
(13) New and Nonofficial Remedies, *J. A. M. A.*, 102, 537 (1934).

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A NOTE ON OPEN PRESCRIPTION DEPARTMENTS.*

J. NORMAN SILSBY.[1]

The present trend toward visible prescription departments is perhaps one of the most hopeful signs of the reawakening of Pharmacy's professional pride. It is beginning to realize that it has professional obligations to itself as well as to the physician and his patient.

Pharmacists are beginning to realize that a more professional atmosphere in the store goes far toward increasing his prestige and business.

It is hoped that the trend toward the visible prescription department becomes more wide-spread, but it is a move that must be considered carefully before it is undertaken.

As no two locations are identical the pharmacist must make his own decisions as to the probable advantages to be derived from an open department. The following are a few of the things he may do well to consider before making his decision.

As the primary object of the drug store is the filling of doctor's prescriptions, the opinion of the local physicians should be sought and their suggestions given serious thought. The good-will of the physician is one of the most potent factors in building a remunerative prescription practice and every effort should be made to secure his coöperation.

With this object in view the writer interviewed a number of our local physicians and they have been unanimous in their disapproval of a department in which it was possible to see the different ingredients that enter in the finished prescription.

At this point it would be well to add a word about the meaning of the term "visible prescription department." As the writer understands the term it means a department where the customer can see the top of the work-bench on which the prescription is being prepared and is able to follow every move the pharmacist makes and see the different ingredients that go to fill the prescription. Of course if the department is one in which the customer can only see the head and shoulders of the pharmacist, the following objections do not hold.

In the recent "Prescription Ingredient Survey" a tabulation of the number of ingredients in the average prescription showed that between 41.4% and 46.8% of all prescriptions studied contained only one ingredient and from 60% to 72.7% had no more than two ingredients. The average for all prescriptions studied was 2.29%.

It can readily be seen from this report that the filling of the greater number of prescriptions consists chiefly of pouring from one bottle to another, or possibly adding a salt to a liquid or mixing two liquids. Of course the care and ability necessary in compounding the ingredients in the first place does not enter into the consideration of the customer when he sees the actual filling of the prescription. Unless the patron understands this the natural reaction of the customer will be one of resentment toward the prescriber for giving him a prescription so simple in its ultimate composition. The fact that the customer can see the ingredients in his prescription is the chief objection of the doctor. The next objection presented by the doctors was the tendency toward self-medication.

Another point that must be considered is that if the prescription calls for "a

*Section on Practical Pharmacy and Dispensing, A. PH. A., Washington meeting, 1935.

[1] Rutgers University School of Pharmacy, Newark, N. J.

poison" to be used internally and the customer sees the label, it may engender an unwarranted fear in his mind—for to him "a poison" is a poison in any quantity.

Then again, every pharmacist has had the experience of a prescription "going wrong" and being forced to throw it away and start over again. To the initiated this has no particular significance but to the patient it may mean that the pharmacist was either lacking in ability or was careless in his work.

Of course, all of these factors may not enter into the consideration of those contemplating a change but the writer thinks they will all be well repaid if they interview their local physicians and give the other points careful thought before they make any changes. In the larger stores, where the prescriptions are received at a desk and the customer is unable to identify his own prescription in process of being dispensed, none of these objections may be serious.

As an alternative to the visible prescription department the writer offers the suggestion of a visible manufacturing department where the pharmacist can make up his pharmaceuticals. Seeing a pharmacist making one of the various types of pharmaceuticals would show the patron that there is more to pharmacy than selling stamps or wrapping packages.

THE PROFESSIONAL OUTLOOK.*

BY L. M. KANTNER.

Several months ago, a gentleman who is deeply interested in professional pharmacy asked my opinion regarding the future of pharmacy. In reply I asked for his opinion on the subject. Rather dolefully we both shook our heads.

Somehow I am led to believe that the public appreciation of pharmacy has slumped. We can remember the long rows of glass-stoppered and glass-labeled bottles that were first encountered upon entering the drug store of a generation ago. The public really had a high appreciation of the professional phases of pharmacy in those days. The stores themselves seemed to radiate confidence, respectability and balance.

The change in the public reaction and the change in the drug stores are almost incredible when contrasted with the advances made in pharmacy as a whole. The educational system has made vast improvement. In earlier days, there were no legal requirements for pharmaceutical practice. Later, a specified number of years of experience was required in addition to passing a state board examination. High school training and college of pharmacy graduation came in due course. Finally, the college course has been increased from two years to four. In my opinion it can be truthfully said that pharmaceutical education is on a standard collegiate basis.

These magnificent advances came in response to the efforts of those who appreciated and understood the importance of pharmacy and the need for placing it on a sound educational foundation. It was accepted that to become a fully recognized profession sound educational training must be made a basic requirement.

Later, there developed another class of individuals who saw an opportunity to commercialize the advances pharmacy was making professionally. A deliberate

* Section on Practical Pharmacy and Dispensing, A. PH. A., Washington meeting, 1934.

effort was made to exploit the standing of the drug store. Pharmacy became the object of a heartless and ruthless attack.

The dignified and thought-provoking shelf bottles gave way, in some stores, to bric-a-brac, cooking utensils, gardening tools, athletic supplies, canned foods, hardware and recently, hard liquor. The soda fountain has developed a lunch and dinner service, carried on in the name of pharmacy.

A few days ago a prominent woman said to me that the modern drug store was a most pitiful institution. The conglomerate assortment of merchandise gives the store a hodge-podge location in the public mind. It is difficult to think of professional practice in a lunch-room atmosphere. One is not inclined to place a high estimate on persons who seem determined to place a low value on themselves. There is no difficulty in understanding the public mind—it is an unavoidable reflection of the course of action followed by thousands of retail pharmacists.

There is, however, no question that we have many high type drug stores, perhaps more than ever before. These stores are conducted on an ethical basis, and by persons devoted to high professional principles. Such stores are a credit to pharmacy, and are efficient in every respect.

Some may claim that the professional and ethical type of pharmacy is not effected by the general merchandising type; that the higher the professional standing the less the store is concerned with purely commercial matters. In my opinion this view is utterly unsound. In the first place, no drug store, however professional it may be, can operate in an uneconomic style. The general merchandising store really sets the pace. They sell thousands of items, running into fabulous sums, in direct competition with the ethical store. Many of these items are used as "loss leaders" with the result that every one must compete on the same basis or be out of the picture. Many of the best selling preparations have been footballed so long that there is no price other than the predatory price. This list includes antiseptics, toilet preparations, cod liver oil, mineral oils, chemicals, pharmaceuticals, articles for feminine hygiene and countless other items. These general merchandising stores buy these articles frequently in enormous quantities, cut them to a predatory level and thus establish the conditions under which they are sold. This state of affairs is largely responsible for the general public estimate that the present-day pharmacist is just another merchant.

While the writer is inclined to judge the future for pharmacy as anything but bright, he believes that the near future will see more professional pharmacies and better pharmaceutical service will be extended the public. There are several reasons for this: The codes have attacked some unfair trade practices, and commonsense has raised the current level of many articles heretofore sold on a predatory basis. Pharmaceutical legislation of the future is certain to be more aggressive. The boards of pharmacy should be clothed with discretion when applications are made for new drug stores. The sale of drugs and medicines should be restricted to pharmacists, and drug stores should conform their activities and classes of sales to reasonable limitations.

My optimism is based upon my inherent feeling that pharmacy is an essential and responsible public health profession. Will the public save it, if we fail to do so?

COÖPERATION BETWEEN DENTISTS AND PHARMACISTS.*

BY SAMUEL M. GORDON.[1]

Dentistry and pharmacy have a common purpose in caring for the public health. This may have been overlooked, probably because of the emphasis that has been given in the past to the restorative aspects of dentistry and because of certain trends in pharmacy, notably the stocking of many shelves with diverse nostrums. The present trend in dentistry is toward prevention, just as we are aware that there is a return to the professional prescription pharmacy, where the nostrum is not permitted to enter. To be sure, the operative and prosthetic aspects of dentistry will continue to absorb a large part of dental effort, even as orthopedic surgery, to choose but one example from the field of medicine, has not been entirely displaced by the new knowledge of nutrition.

The dental curriculum of to-day emphasizes the relationships of physiology, bacteriology, pathology, biochemistry and other basic sciences to the prevention and treatment of dental disease. The study of the action and uses of drugs occupies a fair proportion of the dental curriculum.

Drugs have been used for correcting and alleviating dental disorders from earliest times. Reference to the use of drugs for the relief of toothache is found in the earliest manuscripts. Drugs were used in the attempt to control dental caries in the earliest practice of dentistry. Large amounts of plant and mineral astringents were used in the treatment of diseases of the gums. The dental profession is associated with the discovery of the anesthetic properties of ether and nitrous oxide, through Morton and Wells. Dentists were instrumental in large measure for examining clinically the local anesthetic properties of cocaine and the numerous synthetics related to it. It is estimated that the greater part of all the procaine, and a large amount of epinephrine, manufactured, is now used by dentists.

Dental surgeons treat pathological conditions of the soft and hard tissues of the oral cavity and closely adjacent areas. In the practice of oral surgery and in the routine practice of dentistry, large amounts of general and local anesthetic agents, germicides, analgesics, hypnotics, hemostatics and other classes of drugs are used.

With the appreciation that dental caries is related in some way to the problem of calcium supply and deposition, the dentist prescribes and is being urged to recommend preparations containing calcium and phosphorus, as well as various vitamin-containing preparations.[2] One cannot speak of calcification or the laying down of bone, dentine or enamel, without at least mentioning the endocrine system, and particularly the parathyroid and its function in calcium deposition. Investigations on record, confirmed and unconfirmed, point to an interplay of other glandular secretions.[3]

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* Section on Education and Legislation, A. PH. A., Washington meeting, 1934.

[1] Secretary, Council on Dental Therapeutics of the American Dental Association.

[2] "Diet and the Teeth," Report of the Council on Dental Therapeutics, *J. A. D. A.*, 19, 1843 (October 1932).

[3] "Endocrines and Teeth," Report of the Council on Dental Therapeutics, *Ibid.*, 21, 322 (February 1934).

These points are cited to illustrate the classes of drugs that dentists may be called upon to prescribe, recommend or to advise upon. As far as I am aware from the various state dental practice acts, there are no restrictions on the prescribing or uses of drugs by dentists, other than those that apply to physicians of the regular schools.

Many *clinical* samples are sent to dentists by manufacturers of all kinds, good and bad. The purpose behind the generosity is palpable. The senders do not expect a clinical test in the fine sense of that term. Is it not reasonable to expect that they hope the package will be used and displayed in such a way that the patient remembers the name after he leaves the office, so that it may be purchased without the immediate advice of his medical adviser for similar or other conditions that may arise after his office visit? Here the drug stores also assume part of the blame for counter prescribing.

Contrary, undoubtedly, to the desire of the manufacturers of some pernicious proprietary articles, who would have the dentist serve as his advertising agent, it is gratifying to know that since the inception of the Bureau of Chemistry and the Council on Dental Therapeutics of the American Dental Association, the dental profession by far and large, are protesting these evil practices and supporting the interests of legitimate therapy, as exposed in the reports of the Council which have been appearing in the *Journal of the American Dental Association* in the past five years.

The Council on Dental Therapeutics has been pointing out to dentists the imposition practiced on them and on their patients by patent medicine exploiters parading in the more respectable guise of medicine manufacturers. It need surprise no one acquainted with the work of the Council on Pharmacy and Chemistry that similar conditions exist in the dental profession. Here are just a few of the findings. Two-thirds of a fluidounce of a pyorrhea cure, which sold for ten dollars, was found to be forty per cent sulphuric acid. Another guaranteed cure for pyorrhea, bleeding gums and all the other indefinite expressions linked in the exploiter's literature, under the term pyorrhea, sold for ten dollars for a half pound. This contained pumice, 90 per cent, and alum, 10 per cent. A tablet under the name of Anacin, which, on the whole was a variation of the well-known A. P. C. mixture, was sold through the unwitting advertising of dentists who accepted and passed out the "clinical" samples. The "newest local anesthetic" was found to be a mixture of benzyl alcohol and chloroform. Neu-Ora claimed to be a non-toxic topical anesthetic was found to contain 15 per cent of cocaine. Vleminck's solution was redressed in a therapeutically suggestive name and sold to dentists at an exorbitant price as a pyorrhea cure. These cases can be multiplied endlessly; and their use defeats the aims both of dentistry and pharmacy.

HOW THE DENTAL ASSOCIATION IS MEETING THE PROBLEM.

The work of the Council alluded to briefly has made dentists appreciate that the interests of their patients in this respect can be fully served only by prescribing drugs not on the alluring appeals framed in some advertising office but on an intelligent understanding and use of such drugs, as the individual needs of the patient require. This connotes an understanding of the composition, actions and claims of the drugs. It is gratifying to note that dentists are beginning to ap-

preciate the importance of a wide usage of official drugs and preparations made therefrom as against non-acceptable unofficial drugs.

The term "official drug" is well understood but neither the interests of dentistry or pharmacists are advanced if one puts out a mixture of several official drugs and puts them out under a non-informing name. This is a practice that deserves to be discouraged. This is being discouraged on our part by encouraging the dentist to make greater use of the official drugs, and to avail himself of the service of competent pharmacists. Progress depends on an understanding of the problem at hand. To accelerate this progress, the Council's work has, of necessity, fallen into several categories. It accepts those articles that conform to a printed set of rules. These rules relate to composition, tests for identity and purity, advertising to the public and advertising to the profession, therapeutic claims, naming of articles and rationality of mixtures. It will be at once recognized that these rules are essentially those of the Council on Pharmacy and Chemistry of the American Medical Association. Their value to the medical profession and to the public have been amply demonstrated in the past twenty-five years. Inasmuch as dentifrices present a somewhat different problem, the Council has published a separate set of provisions. Dentifrices are acceptable if, among other things, they are advertised solely as an aid to the tooth brush in cleansing the teeth. The list *Accepted Dental Remedies* now carries reference to 166 proprietary articles and many official articles, but more of this later.

With the aid of the A. D. A. Bureau of Chemistry, the Council examines proprietary articles on the market for their compliance with the rules. Many of the articles already examined are those of secret composition and advertised with claims which are palpably false or unwarranted. This constitutes a large part of the work. Reports discussing the unacceptability of these products appear in the *Journal of the American Dental Association* from time to time.

A further appreciation of wider problems in dental therapeutics is given readers of the *Journal* through a series of reports on the general subject of pharmacology and therapeutics. These general articles are prepared by members of the Council or by outsiders who are invited by the Council for their special knowledge in separate fields. By way of illustration, some of the titles of articles which have already appeared are: "Causes and Treatment of Systemic Reactions in Local Anesthesia," "Endocrines and Teeth," "Glycerin in Toothpastes," "Mouth Washes," "Pre-Medication and Post-Medication for Dentists and Oral Surgeons," "Scientific and Rational Therapeutics—Its Effect on Dental Progress," "Stock Solutions and Mixtures for Local Anesthesia," "Uses and Abuses of Barbitals," "Uses of Pain Relievers in Fixed Proportions by Dentists."

In addition thousands of inquiries from dentists are answered every year on various official and nonofficial products.

ACCEPTED DENTAL REMEDIES.

It is sometimes amusing, if not tragic, to meet pharmacists of all shades who have the impression that dentists do not prescribe beyond mouth washes and dentifrices. Let it be said at the outset that dentifrices and mouth washes are an extremely negligible part of the dentist's interest in materia medica. As a matter

of fact, the Council considers the ordinary run of mouth washes as no more useful than the use of talcum powder after shaving.

It was suggested above that the Council includes acceptable proprietary drugs in a list designated as *Accepted Dental Remedies*. The list, which will soon appear in book form, includes not only these acceptable proprietary articles but also information on useful official drugs and preparations.[1] The inspiration for this little volume has come from "New and Nonofficial Remedies" of the Council on Pharmacy and Chemistry and "Useful Drugs" of the American Medical Association. The information, however, is devised for the members of the dental profession. Preliminary estimates indicate that this little volume will be required or recommended in almost all of the dental schools of the country. It should also have an interest for pharmacists as a point of contact with the dental profession.

In addition to the drugs listed therein, there will be appendices on metrology, solubility of drugs, symptoms and treatment of poisoning, therapeutic indices, and so forth. As an indication of the character of the drugs included, the following selected classes, taken from one of the indices of the book, may be useful:

General Anesthetics.—Nitrous oxide, ether, chloroform, ethylene, ethyl chloride, etc.

Local Anesthetics.—Cocaine, procaine, butyn, apothesine, tutocaine and their various recipes.

Drugs Acting on the Central Nervous System.—Strychnine, atropine, morphine, caffein and a wide variety of hypnotics and anodynes or analgesics, such as barbitals, acetanilid, acetphenetidin, acetylsalicylic acid, codeine, etc.

Drugs Acting on the Circulation.—Epinephrine, nitrites, etc.

Drugs acting on the alimentary canal, and a large class of drugs of purely local action, such as astringents, styptics, antiseptics, germicides, etc.

The extent of the list should surprise no one when consideration is given to the relatively wide field in which the dentist works and the appreciation that has come in the last decades of the relation between the mouth and cognate apparatus and the rest of the human body.

It is not my intention to bore you with formulas or recipes. They may be obtained from many textbooks and other sources.[2] The important point is for pharmacists to acquaint themselves with the demands of the dentists and supply them. These products will range from such simple and innocuous products like dentifrices and non-medicated mouth washes to such agents as are used for the treatment of pyorrhea, trench mouth and the more involved surgical manipulations of dentistry.

HOW PHARMACY CAN MEET THE PROBLEM.

Millions are spent yearly to advertise proprietary products to the dental profession. The advertising manager of one of the better pharmaceutical houses has pointed out that recommendations by dentists have started many an unknown proprietary on the road to fortune. Those worthy of the dentist's attention will

[1] Now available from American Dental Association. All dental schools with few exceptions make use of the book.

[2] Recent articles of interest in this connection are: Blass, J. Lewis, Ph.G., D.D.S., "Medicinal Aids in General Dentistry," *Dental Cosmos*, 76, 239 (February 1934).

Aiguier, James E., Ph.G., D.D.S., "Dental Medicines: Modern Pharmacologic and Therapeutic Principles Applied to Their Use in General Practice," *Dental Cosmos*, 75, 1184 (December 1933).

be in *Accepted Dental Remedies*, and no doubt will be available from pharmacies. No dental journal which goes to dentists engaged in the general practice of dentistry censors its advertising on a published basis except the *Journal of the American Dental Association*. Some of these journals are sent gratis to dentists. The circulation cost is defrayed by dental supply houses. In these journals may be found advertised the old well-known mixtures, clothed in fancy and appealing names, foreign to the nomenclature of the Pharmacopœia. *Apropos* of this, the late Professor Puckner of the Council on Pharmacy and Chemistry has aptly pointed out that if a law were enacted to oblige manufacturers to sell medicinal products under a properly descriptive name or make it illegal for a dentist or physician to use or prescribe them, the use of most proprietary remedies would be discontinued and successful newcomers might each year be counted on the fingers of one hand.

This multiplication of trade names for well-known preparations is used to disparage the well-known and useful preparations, and the assumed advantages of the new mixtures are extolled. For example, procaine base has been known to chemists, physicians and dentists for many years. Its pharmacologic properties were well worked out by Gros in 1910, and confirmed by Sollmann and others since then. Recently there has come on the market, primarily to dentists, the same procaine base in lanolin, and other non-essential ingredients, and heralded to the dentist with the following statements:

"There has been a continuous search, since Koller's use of cocaine in 1884, for a drug to be used as a topical anesthetic, possessing the ability to penetrate mucous membranes, yet having low toxicity."

There are available in the Pharmacopœia, several drugs of proven usefulness for topical anesthesia, even considering the limitations of this form of anesthesia, such as benzocain, ethyl chloride, cocaine and others.

In the treatment of trench mouth, besides his operative technique, the dentist uses a wide variety of drugs, ranging from escharotics, such as chromic acid, to milder drugs like sodium perborate, and even salt solutions. In between these two extremes are found occasionally the use of mercuric chloride, hydrogen peroxide, bismuth compounds and the organic arsenicals. It is desirable that arsenicals and other unstable preparations be freshly prepared. Hence there is no rational reason why the pharmacist should not acquaint the dentist how he can furnish these preparations at a greatly reduced cost and moreover on a basis that more fully benefits both.

An incident will illustrate the benefits of intelligent coöperation. Sometime ago a dentist who had been having post-operative difficulty with the stock solution of a local anesthetic that he had been using invited my assistance. The matter was discussed with the result that a method was worked out whereby he could prepare his own solutions of procaine and epinephrine in an alkaline medium. This has been a little over a year ago. This particular dentist is highly pleased not alone with the fact that he has been able to affect a considerable saving; but more importantly, the feeling that his patients are more comfortable. Furthermore there is a sense of accomplishment and prestige that comes from knowing in detail the preparation of the material he was injecting into his patient, rather than depending on semi-secret preparations as he had been in the custom of using. This is not an isolated case. Such examples may be cited over and over again.

In the course of his practice, a dentist uses many hypnotics and analgesics. Unfortunately in the past he has been an unwitting salesman for the shot-gun mixtures so long disparaged by students of the problem. The extent of his prescribing was reached when he handed out a package with two or three tablets, but the package bore the name, in large type, and directions that invited self-medication for real or imaginary ills foreign to the purpose of the case. There is a legitimate field of interest between pharmacy and dentistry in this respect, since many dentists write prescriptions for drugs for the relief of pre- and post-operative pain. But the system is not as general as it should be. Some dentists are reluctant to write prescriptions, because of the economic aspect. If they wish their patients to have a limited number of doses, let us say of an hypnotic, they find the cost unnecessarily high. Hence they carry in their own medicine cabinets a stock for dispensing. This should by no means be discouraging to pharmacists, but should rather be seized as an opportunity. It is well known that the mode of administration is an important factor in drug action. Sometimes a cachet or a capsule may be preferable to the compressed or the triturated tablet. The situation is somewhat analogous to the use of drugs by ophthalmologists and other medical specialists. The oculist does not write a prescription for each dose of atropine he uses for mydriasis. Yet the filling of this class of prescription is a point of pride with many professional pharmacies.

Despite the successful operation of many pharmacies, meeting the highest requirements of scientific despensing, the dentist still obtains his drugs from other sources, and to his economic disparagement and sometimes as already indicated to the unwitting abuse of his patient. For example, Eugenol sold under another name sells for ten times its real cost. Preparations essentially zinc oxide, used by dentists for so-called pulp capping, are purchased by dentists at the rate of seventy-two dollars for a pound. The pharmacist can sell C.P. zinc oxide at one dollar a pound and yet make more than a fair profit.

The Council has pointed out that mouth washes are of little or no value in the treatment of dental disease. Yet their limited usefulness is recognized because of the pleasant feeling they leave after operative procedures. Without becoming involved in details, Dean Schicks has rendered a useful service by placing on record certain mouth washes of open composition. These can be detailed by pharmacists to dentists at a reasonable cost.

Aside from personal solicitation which should always be employed wherever possible, the pharmacist may acquaint himself with the needs of dentists by following regularly the reports of the Council on Dental Therapeutics which appear in the *Journal of the American Dental Association*, and particularly to acquaint themselves with the material in the little book, "Accepted Dental Remedies," about to be published. The descriptions in this volume will, on the whole, be free of recipes and here the pharmacist can assist the dentist by acquainting him with the most advantageous pharmaceutic use of the various useful drugs.

Professor Schicks of Rutgers University School of Pharmacy must be regarded as a pioneer among pharmacists in bringing together both groups. The circumstance that several meetings of the American Association of Colleges of Pharmacy have been devoted to the prescription requirements of dentists is an omen for success. Further it is a source of encouragement to know of the meetings of local

dentists with members of Professor Schicks' school. This is a phase of the work that should be fostered by more schools of pharmacy, pharmacy associations and dentists. Professor Schicks' experience indicates that dentists will welcome such efforts. It appears that the schools of pharmacy and dentistry of the same university can find common meeting ground.

Just as advertisers find it profitable to spend millions in the attempt to make dentists proprietary-minded conscious, pharmacists can work to make dentists pharmacopœial conscious. Any effort of this kind that draws its inspiration from the ideals of both professions cannot help but benefit the public for whom both professions aim to serve.

THE PLACE OF A FIELD REPRESENTATIVE IN COÖPERATIVE PROFESSIONAL ADVERTISING.*

BY L. WAIT RISING.

This era of economic decadence is witnessing the rebirth of professional pharmacy. There was a time, not so many years ago, when such a movement could only be predicted, and that with some hesitancy. But the competitive scramble in low-priced drug sundries brought on by the period of depression has changed prediction to actuality. Pharmacy is going professional. Even now a sufficiently large percentage of the existing drug stores are being made over, or will be shortly, into pharmacies with true professional ideals and methods of doing business which warrant the setting up of a new classification to take care of them. While they were the exception rather than the rule, their very minority made apparent the uselessness of dealing with them as a group.

However, this has changed. When speaking of pharmacies to-day we must differentiate between two kinds: The merchandising establishment of the "corner drug store" variety, and the prescription pharmacy, which, while no less a merchandising unit in its way, is not considered as a true retail store by the laity.

This amounts to a division of trade, and brings with it not a division but a whole new set of merchandising principles and problems that apply only to the prescription pharmacy. One of the latter is advertising. It is trite to say that a professional pharmacy cannot advertise in the same manner as the ordinary retail store. Its appeal must be both dignified and restricted and it must be directed at the physician as much or more than at the general public. Many drug stores conduct a profitable business without physician coöperation, the lack of which would quickly throttle the prescription pharmacies.

What then are the best advertising methods for securing this necessary professional friendship? Indirect contact through the mails is good and is a means of reaching the doctor periodically which is open to every pharmacist. There is no limit to the number of physicians one pharmacist can reach in this way nor to the number of times such contact can be made. A mail campaign will serve to focus some attention on the organization conducting it.

A second and perhaps the ideal way to attract professional patronage, especially if it be combined with a mail campaign, is by frequent personal contact with the

* Section on Practical Pharmacy and Dispensing, A. PH. A., Washington meeting, 1934.

physicians whose business is being sought. By this means alone can the pharmacist obtain the full measure of value for his advertising effort. To interview a physician is to be given the fullest opportunity to convince him of the merits of the pharmacy in question. There is no chance for him to throw away unnoticed advertising of this nature. It cannot be tabled to be perused some other time, only to be forgotten completely. The story of the pharmacist is put across right then. And if it is interestingly presented, there will be questions to answer that mean openings for other messages perhaps unrelated to the subject upon which it was first intended to interview the doctor, but none-the-less valuable. Through these conversations the deeper medical interests of the physician can be learned, the special pharmaceutical and therapeutic services which he would like rendered him can be ascertained. It is obvious without pointing out other advantages accruing both to the physician and the pharmacist from these periodic visits to the office of the former, that a mutually beneficial coöperative relationship can be established as a direct result.

Just how near the actual results obtained by this contact advertising approach the theoretical total possible to achieve will depend primarily on the man making the contacts. The pharmacy being represented must measure up in full to all that is claimed for it, but the fact that it does is of secondary importance when we consider the factor most responsible for the ultimate success of a personal contact campaign. Given two establishments possessing equal physical equipment, the one with the better contact man will attract more than half the professional business. In other words, inanimate advertising assets such as superior facilities are not worth as much to a business as the men who go out and tell about them.

Not all pharmacists are equally good at the telling. A large number of excellent pharmacists are unable to compete satisfactorily in a serious program of selling their organizations through personal calls. Figuratively speaking, they are forced to hide their lights under a bushel. That is poor economics. It gives all the advantage to the pharmacy possessing poorer equipment but having a better personality in representing it to the medical profession.

There is, however, a way to offset this disadvantage and to obtain the proper kind of representation, especially in the more thickly settled localities. It is one that has been tried before but with no wide acceptance following its use. This lack of acclaim probably resulted from certain difficulties which will be pointed out later. If, therefore, a simple alteration or complete removal of one or two inhibitory influences would rehabilitate an old, indifferently successful contact system, the plan certainly merits review.

The method is fundamentally this: In any community where there are a number of drug stores, let those which place a premium on the professional business cooperate in a common advertising program which can be supplemented by the individual organizations as they see fit. The stores would, of course, be carefully chosen. The proper choice of the pharmacies participating is vital. Proximity of location which means competition is not of such importance as the caliber of the various units of the organization. When a miscellaneous group is represented, there will always be one or more which by bad precept or example destroy the faith of the physicians in the entire membership. This has been forcibly demonstrated when pharmaceutical associations have attempted personal visitation work. Care-

ful selection of the participating stores eliminates that disadvantage and also eliminates inefficient direction of the campaign.

The stores so united would pool the bulk of their advertising funds, thus obtaining a fair-sized treasury. The sum made available would vary, depending on the number of stores coöperating and the average annual allowance they set aside for advertising purposes, but the minimum would scarcely be less than $2400.00.

With this budget, the group is now able to hire a full-time field representative whose chief duty will be to make office contacts with the physicians. The salary that can be paid for this work would be sufficiently large to attract men of excellent training and who possess distinct capabilities for the task in hand. This means that each of the coöperating pharmacists can now have as a part-time member of their staffs, a man more able in personal contact or detail work than themselves. This man is to be considered as only a part-time member of the individual staffs, because he is working specifically as an emissary of each pharmacy only when he is calling on the doctors designated by that pharmacy as the ones it particularly wants approached.

Two major results are immediately achieved. The pharmacists are assured of the most efficient representation among the men from whence their business springs. This major advertising problem solved, they now have more time for other important details of business.

The messages to be carried by the field representative to the physicians will naturally be influenced by many factors, but their objectives will always be the same—namely, selling the professional services and personalities of the pharmacies combining in the advertising effort. By this method the physicians in a given locality are constantly being reminded by pleasant contact with a personal representative of Blank's pharmacy that it can best serve their needs. And because the proper kind of man is doing the detailing, the doctors have a person upon whom they can rely for valuable assistance with both pharmaceutical and therapeutic problems. For this reason alone they will always be glad to see him and more than willing to place considerable confidence in the pharmacies he represents.

In addition to his worth as a personal contact man, the field representative can earn his money in other ways. Because he is constantly meeting and studying a hundred or more doctors, his advice is invaluable in building up and coördinating advertising campaigns to be carried on by the individual units of the organization during the intervals between his visits to the physicians with whom they specifically requested to contact. He can in this fashion gear the minor advertising efforts to a higher degree of efficiency. By watching the prescribing tendencies of his doctors, he can assist materially in shifting slow prescription stock to places where it will move more quickly. Even in the matter of developing a fair pricing system for prescriptions his advice will be helpful. These suggest just a few of the ways in which a field representative having a knowledge of the problems and an interest in a number of professional pharmacies can more than pay his way.

It may be said with considerable truth that any pharmacy can, by using its regular staff, obtain for itself the personal contacts, carry on other advertising efforts, and do any number of other things calculated to build better professional relations and increase professional business. But the point is—how many of them

will do it without some organization such as has been suggested? This furnishes the stimulus which is all too often needed to galvanize individual initiative into full action.

"PATENT MEDICINES."*

BY J. HAMPTON HOCH.

Down the street the flaming neon sign casts its ruddy lure—"Cut-Rate Patent Medicines." Cut-rate they may be, but are they patent medicines? Nostrums of proprietary origin having registered and protected names are called "patent medicines" but, in the legal sense of the word, a patent medicine is one whose composition or method of preparation or both has been patented and is not a secret because these facts appear in the patent specifications and become public property at the end of seventeen years. The distinction between a patent and a proprietary medicine, as these terms are generally used to-day, was non-existent three hundred years ago when preparations of this type originated.

Back in 17th century England, a year before Charles I ascended the throne, the "Arcanum Goddardianum," more familiarly called Goddard's Drops, was patented. This first patent medicine acquired such a wide reputation as a specific for epilepsy that Charles II, thinking to benefit humanity by making the formula accessible, purchased the secret of its preparation from Dr. Goddard for 1500 pounds. And therefore it was also called "King Charles' Drops" or simply the "King's Drops" or, later, "Royal English Drops" and "English Drops." Spirit of human skull and opium, for these were the ingredients, sound revolting even for such a dread affliction as the "falling sickness," but, then, strong stomachs had our fathers of old.

The fact that Jonathan Goddard obtained a purchaser with a copious pocket undoubtedly stimulated the appearance of the many nostrums and proprietaries which followed this first one. Advertisements in the press reveal the wide distribution of trades which adopted proprietary remedies as side-lines—stationers, booksellers, tinsmiths, hosiers—all bent on selling this "sovereign cure" or "effectual remedy" and that "established medicine" which is to be had "no where else." And frequently the public was warned against imitators.

The English settlers who migrated to these shores demanded those remedies with which they were familiar in the old country and it was not long before the news-sheets of America advertised the same preparations in the same way; all of which probably made the "cover to cover" reader feel quite as if he were back in England.

Among the better known proprietaries of the 17th century which were advertised in the early newspapers of the Southern Colonies and set forth in glowing terms to the credulous reader we find Anderson's Scots' Pills, Dutch Drops, Daffy's Elixir, Lockyer's Pills and Stoughton's Elixir.

ANDERSON'S PILLS.

The originator of this proprietary was a Scotch physician, Dr. Patrick Anderson, who claimed to have obtained the formula in Venice. The actual formula has been disputed for a long

* Section on Historical Pharmacy, A. PH. A., Washington meeting, 1934.

time, but contained Barbadoes aloe as its main constituent along with jalap and oil of anise. Various published formulas note soap, ivory black, colocynth, gamboge, black hellebore, potassium subcarbonate, and syrup of buckthorn as excipients or additional constituents. The pills were 3 or 4 grains in weight and sold for 1 shilling the box.

After Anderson's death his daughter made and sold the pills, subsequently passing to Thomas Weir of Edinburgh the right of manufacture. Weir obtained a patent on them in 1687. In the early part of the next century Mrs. Isabella Inglish (or English), then the proprietress, explained how the genuine product was to be recognized. "The true Pills have their Boxes seal'd on the Top (in black Wax) with a Lion Rampant, and 3 Mallets Argent, Dr. Anderson's Head betwixt I.I. with his Name round it, and Isabella Inglish underneath, the Shield in a Scroll."

DUTCH DROPS.

This proprietary, first made in Haarlem in 1672, had as its basis the residue left in the redistillation of oil of turpentine. To this red, viscid and resinous matter (called Balsam of Turpentine) was added spirit of nitrous ether, tincture of guaiac and small portions of oil of amber and oil of cloves.

Two and a half centuries have rolled over the sands of time without obliterating this preparation, which is certainly noteworthy for its longevity. Dutch Drops were originally sold for half a guinea a bottle and are said to have netted the proprietors handsome returns.

DAFFY'S ELIXIR.

This compound like all the more popular proprietaries was widely counterfeited and there are several formulas for its preparation. Anthony Daffy, "Student in Physick," was probably the originator; and in a pamphlet of 1673, "Elixir Salutis: the choise drink of health or Health-Bringing Drink," he lauds his "Secret" as "far beyond any Medicament yet known." Following Daffy's death (1750), his widow continued the business. Later, Mrs. Mary Swinton, "niece and executrix of Anthony Daffy and wife of Dr. Peter Swinton, who has prepared and in her name sold. . .the true Daffy's Elixir," charged 6 shillings for a pint bottle. The Swinton formula called for Jalap, 3 lb.; Senna, 2 oz.; Coriander Seed, Aniseed, Liquorice Root and Elecampane, of each 4 oz.; Spirit of Wine and Water, of each a gallon. The Tinctura Sennæ Compositæ of the British Pharmacopœia is a lineal descendent of this old proprietary.

LOCKYER'S PILLS.

The vainglorious Lionel Lockyer used his tomb to advertise his "most Excellent Pills called 'Pillulæ Radijs Solis Extractæ.'" The magniloquent epitaph in the Cathedral of St. Saviour, Southwark, reads:

"Here Lockyer lies interr'd enough his name
Speakes one, hath few competitors in fame
A name soe Greate soe Generalle may scorne
Inscriptions w'h doe vulgar tombs adorne;
A diminution 'tis to write in verse
His eulogies, w'h most mens' mouths rehearse
His virtues and his PILLS are soe well known
That envy can't confine them under stone,
But they'l survive his dust and not expire,
Till all things else at th' universall fire,
This verse is lost: his Pill embalmes him safe
To future times with out an Epitaph."

Although disclaiming the use of "turpeth minerale," "the sulphur of antimony" or "crude mercury" in his pills, Lockyer did not divulge its composition or method of preparation. The dose of this "Universall Medicine" seems to have been somewhat flexible since four were "a good ordinary Dose, the which contains some six Grains." Each tin of pills was "Lapt up in Papers" and bore the signatures of the proprietors "and Sealed at one end with the Doctor's Coat of Arms, being Three Boars Heads." A four-shilling box contained "above One hundred Pills (sometimes

more and sometimes less, according as they are in bigness);" for two shillings one received "about Fifty in the Half-Box." Accuracy and pharmaceutic elegance were evidently not a *sine qua non*.

An early 18th century dispensatory which purports to give the basis of Lockyer's Pill directs "Panacea of Antimony, 4 parts; Opium, $1^1/_2$ parts; Extract of black Hellebore, 3 parts."

These pills were vaunted as a cure-all in the broadest sense of the term, ***viz.***

"Falling-Sickness, Frenzy, Vertigo, Rheums or Defluxions, Head-ach of all Kinds, Convulsion-Fits, Difficulty of Breathing, Stoppage of the Stomach, Cough, Tissick, Inflammation of the Lungs, Consumption, Want of Appetite, bad Digestion, Pain in the Stomach, Worms of all Kinds, Colick, Inflammations and Obstructions of the Liver, Corruption, Putrefaction of the Blood, Jaundies, Black and Yellow; Dropsie or Tympany, Hard Swellings, Pain and Inflammations of the Spleen, Overflowing of the Gall, Trembling of the Heart, Swoonings, Stoppage and Scalding of Urine, Bloody-Flux, Gravel and Stone in the Reins and Bladder, Rickets, King's Evil, Tumours and Hard Swellings, and Ulcers on the Body, Leprosie, Scurvy, Scab, Itch, the Gonorrhoea or Running of the Reins, the Pox, the Gout, Violent and Hectick Fevers, Agues, Green-Sickness, Fits of the Mother, Stoppage of Terms, restores Radical Moisture, cleanses and strengthens the Spermatick Vessels, increases and animates the Seed in both Sexes, fortifies the Womb, preserves the Embryo, strengthens the Child, prevents Miscarriage, restores the lost Delight of Nature, and absolutely cures all Barrenness curable by Medicine; Antidote against all Contagious Airs and Infectious Diseases, and perfectly resists all Foulness and Infection in the Act of Generation, mundifies and cleanses the Skin, restores and increases Beauty, makes Old Age Comely and Beautiful and the Countenance of all to be Cheerful and Sanguine."

STOUGHTON'S ELIXIR STOMACHICUM.

"Poplicola" writing in the *Gentleman's Magazine* for August 1748, says, "By nostrums I mean such medicines as are kept a secret for the use of the proprietors, though advertised for the benefit of the public." Then, indeed, Richard Stoughton's preparation certainly qualifies; for he was cunning enough not to be too exact in his patent specifications (thereby keeping his secret) and his "bitters" were not lacking in the public notices.

The patent grant from Queen Anne to "our trusty and well-beloved Richard Stoughton, Apothecary" is dated 1712, but the "Unicorn, in Southwark" saw many bottles of "Stoughton's Drops" or "Stoughton's Cordial Elixir" sold at 1 shilling, years before the patent was issued. Perhaps the only reason for obtaining a patent was to warn off the bolder counterfeiters.

Many other "patents," some of greater and some of less renown, are to be found mentioned in the columns of the early news-sheets of the American Colonies: Godfrey's Cordial, Freeman's Elixir, Squire's Elixir, Bateman's Drops, Turlington's Balsam of Life, James' Powder, Hooper's Pills, Schwanberg's Liquid Shell, Dr. Ward's White Drops, Misaubius' Pills, Eaton's Styptic.

Time has seen most of these preparations interred in the therapeutic graveyard, but here and there one has survived, if in a somewhat modified form, and has won through to a wider field of usefulness in our official standards.

WISCONSIN PHARMACEUTICAL ASSOCIATION.

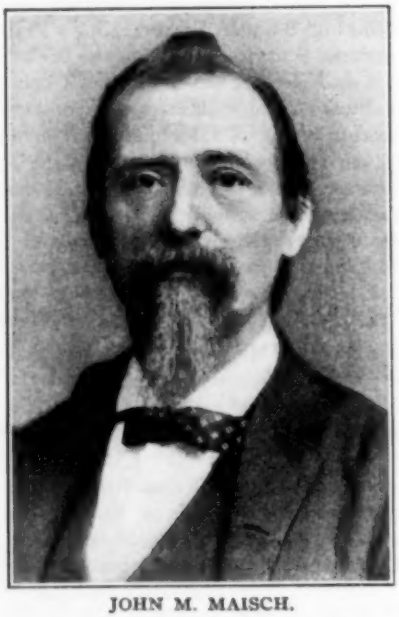
The Wisconsin Pharmaceutical Association will hold a one-day meeting at the Park Hotel, Madison, February 27th. The purpose of this meeting is to do important legislative work and to have a business session to take up such other matters as may be important. Legislative subjects which will be discussed are:

1. The proposed Wisconsin Fair Trade Act, commonly called the Junior Capper-Kelly Bill.
2. Suggested changes in pharmacy laws.
3. Retention of medicinal liquor permit.
4. Peddlers' Ordinance for local communities.
5. State narcotic legislation as requested by United States Commissioner of Narcotics.

EMINENT AMERICAN PHARMACOGNOSISTS OF THE NINETEENTH CENTURY.*

BY HEBER W. YOUNGKEN.

In approaching this topic I am at once confronted with the problem of scope. Shall I record in this humble historical effort the life and work of all of the pharmacognosists who have risen to eminence in America and whose earthly activities began during the Nineteenth Century or shall I limit the field of my theme to those of that distinguished number whose labors have ended but whose souls abide with us? I have chosen the latter course as more appropriate at this time, being duly mindful of the outstanding work and worth of the others who are still living but whose labors for the advancement of science have not ceased.



JOHN M. MAISCH.

JOHN M. MAISCH (1831–1893).

The pioneer in American pharmacognosy was undoubtedly John Michael Maisch, son of a German merchant, who was born at Hanau on the Main on January 30, 1831. After a brief period of education in a private school and later in a city school, he determined to enter the jewelry business when a little more than twelve years of age. While pursuing his apprenticeship he took instruction in the Realschule and Oberrealschule and soon evinced interest in botany, zoölogy and theology. He early conceived the idea of the union of religion and science and was encouraged to prepare for the university by his teachers. During this preparation he took chemistry under Professor Bromeis and became so interested in the natural sciences that he gave up the idea of the ministry. He had so overexerted himself through the study of the dead languages and other preparatory subjects that his health failed and his university plans were abandoned.

In 1849 Maisch came to America. He was almost penniless when he arrived in Baltimore and, in order to supply the necessaries of life, obtained work for about six months in a paper box factory. While there he met a Dr. Wiss who, in 1850, opened a drug store and hired young Maisch as his assistant. Maisch was very ambitious and eagerly sought instruction from Dr. Wiss and Dr. Vogler, making constant use of Dr. Wiss' pharmaceutical books during his spare time. The store was sold in 1851 and young Maisch obtained work in another drug store in Washington until 1853. From 1853–1855 he worked in drug stores in Philadelphia and New York and in a chemical establishment in Brooklyn.

In 1856 he returned to Philadelphia to accept employment as clerk for E. B.

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* Section on Historical Pharmacy, A. PH. A., Madison meeting, 1934.

Garrigues and Robert Shoemaker and Company, positions he held until 1859. He then was called to teach in Professor Parrish's School of Pharmacy at 8th and Arch Streets.

In 1861 he accepted the call to the chair of Pharmacy and Materia Medica in the College of Pharmacy of the City of New York which he occupied for two years, working during his spare time in the laboratory of E. R. Squibb.

The Civil War was on and Maisch was called in 1863 to organize and conduct the United States Army Laboratory at Philadelphia becoming director thereof until the end of the war.

After the close of the war he conducted a drug store at 1607 Ridge Avenue, Philadelphia, until 1871 when he sold it to give his entire time to teaching and the secretaryship of the AMERICAN PHARMACEUTICAL ASSOCIATION.

In 1866, Professor Maisch was elected to the chair of Pharmacy at the Philadelphia College of Pharmacy, succeeding William Procter, Jr. The following year he exchanged chairs with Professor Parrish by mutual consent and the title of the chair was changed to Materia Medica and Botany. This chair Maisch retained for 26 years, or until the time of his death. As a teacher he impressed his strong personality upon all whose fortune it was to sit at his feet.

Professor Maisch was a prolific writer, a persistent observer and a careful investigator. He was the first American pharmacognosist to recognize the value of the microscope in the study of drugs and adulterants. His hobby was peculiarly that of a searcher after adulterants. As early as 1854 he wrote an article for the *American Journal of Pharmacy* entitled "On the Adulteration of Drugs and Chemical Preparations." Realizing the need of a microscope in his investigations he induced the college to procure one. This arrived in 1861 and Maisch is said to have employed it constantly in his work.

Among his papers bearing upon pharmacognosy were the following: "On Chelidonium majus," "African Saffron," "Lycopodium clavatum," "Matico," "Purity of Commercial Spanish Saffron," "On the Adulteration of Volatile Oils," "Sneezeweed," "On the Active Principles of Rhus Toxicodendron," "Maize as a Sugar Producer," "Maize Oil" and "On the Tubers of Dioscorea sp."

From 1870 until his death Maisch was editor of the *American Journal of Pharmacy*. He was co-editor with Dr. Alfred Stille of the "National Dispensatory" and revised or assisted in the revision of a number of text and reference works including the third edition of "A Universal Formulary" by R. Eglesfeld Griffith, M.D. (1874).

In 1882 the first edition of his "Organic Materia Medica" appeared. This text which passed through five editions became the outstanding standard in its field for several generations.

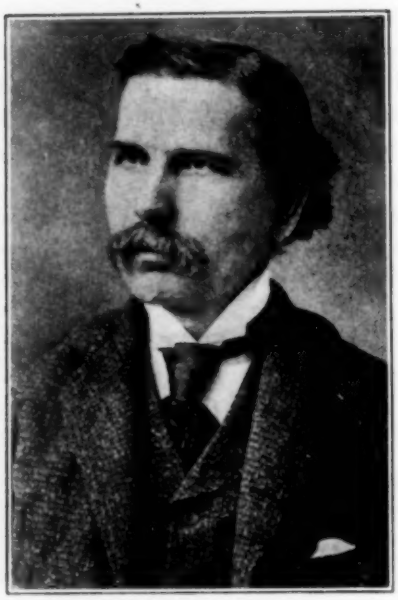
Maisch died of a malignant growth on September 10, 1893, only a short time after being the first American recipient of the Hanbury Medal for distinguished services and for original research in the natural history and chemistry of drugs.

He has rightly been called one of the master minds of American Pharmacy and he can well be ranked as one of the most industrious and versatile of workers in the field of international pharmacognosy.

EDSON S. BASTIN (1843–1897).

Edson Sewell Bastin was born in Ozaukee County, Wisconsin, on May 29, 1843. His boyhood was spent on a farm where he was obliged to work in the summer and attended the district school in the winter. His parents died before he had reached his teens which threw him on his own resources.

At the age of sixteen he entered Carroll College and pursued work there for three years. The Civil War had broken out, and in 1862 he enlisted in the 28th regiment of Wisconsin volunteer infantry. Within two years after enlistment he was commissioned Captain of the 4th Arkansas Cavalry. Following the war he was offered a cadetship at West Point, but declined the honor and instead entered Chicago University from which he graduated in 1867. In the Fall of the same year he entered the Theological School of the same University and graduated with the B.D. in 1870. He had intended to preach but his great interest in Botany and other natural sciences influenced him to enter Pharmacy as a means to the end. He was United States Marshal in Indian Territory for several years, and in 1874 returned to Chicago to accept the position as registrar of the University of Chicago in which institution he was soon made an Instructor in Botany. In 1876 he was advanced to the Professorship of Botany and Geology and the same year was made a Lecturer on Botany in the Chicago College of Pharmacy.



EDSON S. BASTIN.

In 1883 he resigned from the University of Chicago to devote his entire time to the Chicago College of Pharmacy. Here he first established a botanical and microscopical laboratory.

In 1887, he issued his "Elements of Botany" and, in 1889, the second edition of the work appeared under the title of "College Botany." This work was destined to be his greatest masterpiece and was widely adopted in both academic and pharmaceutical colleges. In 1890, Professor Bastin resigned his position at the Chicago College of Pharmacy to accept the chair of Botany and Materia Medica in the Northwestern University School of Pharmacy. Here he started another microscopical laboratory and wrote papers on "The Flora of the South Shore of Lake Michigan," "Starches in Root Drugs," "Contributions on Plant Hairs," "Detection of Stem Admixtures in Root Drugs," "Plant Crystals" and "Notes on Vegetable Histology."

In the Autumn of 1893 he became Professor of Botany and Materia Medica at the Philadelphia College of Pharmacy as successor to Professor Maisch.

Within a year he brought about the establishment of a botanical and microscopical laboratory and published another excellent book, "Laboratory Exercises in Botany." This work contained several hundred original drawings.

During 1895 he published nine illustrated papers on local and medicinal plants.

In 1896, he and Henry Trimble began a series of papers on "The North American Coniferæ" which they published in the *American Journal of Pharmacy*. While engaged in preparing a text on pharmacognosy he was stricken with exophthalmic goitre and died as a result of cerebral hemorrhage on April 6, 1897, at the age of 54 years.

Professor Bastin was a staunch advocate of the practical study of the natural sciences. His method was that of studying the plant and drug material in hand, using books only as guides.

JULIUS O. SCHLOTTERBECK (1865–1917).

Julius Otto Schlotterbeck was born of German parentage in Ann Arbor, Michigan, September 1, 1865. He received his early education in the public schools of that city and for several years served an apprenticeship in Moore's drug store. In 1885 he matriculated in the School of Pharmacy of the University of Michigan and graduated therefrom in 1887 with the degree of Pharmaceutical Chemist. Shortly after his graduation he became manager of the Eagle Pharmacy in Pittsburgh, Pa., where he served until the Fall of 1888 when he returned to the University of Michigan to become Assistant Instructor in Pharmacognosy and Pharmacy. While serving in this position he pursued studies in the College of Literature, Science and Art of the University from which he was graduated in 1891 with the degree of B.S. in Chemistry. From 1892 to 1895 he was Instructor in Pharmacognosy and Botany in his *Alma Mater*. From 1895 to 1896 he studied abroad at the University of Berne, specializing in Pharmacognosy under the eminent Tschirch and received his Ph.D. in 1896. His inaugural dissertation was on "The Developmental History of Pharmacognostically Important Seeds."

JULIUS O. SCHLOTTERBECK.

He returned to Ann Arbor in the Fall of the same year and was made Assistant Professor of Pharmacognosy. In 1904 he was advanced to Junior Professor and in 1905 to Professor and Dean of the College of Pharmacy. For a time he was consulting expert for Frederick Stearns and Company and for the J. Hungerford Smith Company.

He has been rated as one of the best teachers of pharmacognosy in the United States. Many of his pupils have attested to his ability, loyalty, faith and vision as his outstanding characters; he lived these and inspired others to live them.

He was a member of many scientific associations, secretary of the American Conference of Pharmaceutical Faculties 1904–1908 and its president from 1910–1912. He was a member of the Committee on Revision of the United States Pharma-

copœia of 1900, and chairman of the Scientific Section of the AMERICAN PHARMACEUTICAL ASSOCIATION from 1902–1903.

Dr. Schlotterbeck was a brilliant investigator in the fields of pharmacognosy and phytochemistry. He received two Ebert Prizes for outstanding work in the sciences. Among his original contributions are included the following: "Notes on the Behavior of Albuminate of Iron and Ferratin with Artificial Gastric Juice" (with S. R. Boyce), "Analysis of Kola" (with J. W. T. Knox), "Comparative Structure of the Leaves of Datura Stramonium, Atropa Belladonna and Hyoscyamus Niger" (with A. Van Zwaluwenburg), "Clove Bark" (with A. Van Zwaluwenburg), "Developmental History of Important Seeds: Cotton Seed and Cacao Seed" (with A. Van Zwaluwenburg), "The Alkaloids of Bocconia Cordata and the Assay of Sanguinaria and Its Preparations" (with Paul Murrill), "The Nature of Commercial Sanguinarine Nitrate, Adlumia Cirrhosa: A New Protopine Bearing Plant," "The Structure and Development of the Fruit of Illicium Floridanum" (with C. R. Eckler), "Contribution to the Chemistry of Stylophorum Diphyllum" (with H. C. Watkins), "Does Argemone Mexicana Contain Morphine?" "The Development and Structure of the Seed of Stylophorum Diphyllum and Chelidonium Majus," "The Alkaloids of Adlumia Cirrhosa" (with H. C. Watkins), two papers on "Contribution to the Chemistry of Chelidonine" (with Watkins and Knapp, respectively), "Contribution to the Chemistry of Bocconia Cordata" (with W. H. Blome), "The Development and Structure of the Seed of Argemone Mexicana" and "Vanilla Extract" (with J. R. Dean).

Dr. Schlotterbeck was devoted to his wife and family of two boys and one girl, and was delightful company according to many of his friends. He loved music and played the piano well. He also had a fine sense of humor and possessed that rare gift of being able to tell a story well. Due to his German parentage and early training, he spoke German fluently which proved invaluable to him while studying for the doctor's degree at Berne under Tschirch.

In September 1916, while attending a meeting in New York, he was taken ill. Two periods in the hospital failed to help him and he died of a lingering illness at his home in Ann Arbor, June 1, 1917.

(To be concluded.)

NEW ZEALAND PHARMACEUTICAL CONFERENCE.

Pharmacists from all States and New Zealand met in Melbourne to attend the biennial meeting of the Pharmaceutical Association of Australia and New Zealand.

A varied program of work and entertainment was provided. Commencing with the meeting of the Sciences Association, pharmacy is represented by Section "O" (Pharmaceutical Science), and at the various sessions some valuable contributions of a scientific nature were made. A full session was devoted to "The Expanding Pharmaceutical Curriculum." Dr. Roy Gardner, F. I. C., of New Zealand, presided at the Section "O" meetings, and as the official guest of the Pharmaceutical Society of Victoria; A. R. Penfold, of the Sydney Technological Museum, whose work on the Eucalyptus is well known, read two special papers on the subject. Other leading pharmaceutical authorities presented communications that were interesting and instructive.

Following on the Section "O" sessions, the Pharmaceutical Association held its sessions. The Association is the clearing house of Australasian pharmacy. Embracing as it does representatives of all the pharmaceutical bodies in New Zealand and all the Australian States, it focuses attention on national problems, and shapes the pharmaceutical policy for the ensuing two years. A conference of Pharmacy Boards was held after the meeting of the Association.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

C. B. JORDAN—CHAIRMAN OF EXECUTIVE COMMITTEE, A. A. C. P., EDITOR OF THIS DEPARTMENT.

The following paper by Professor Briggs together with discussions by Drs. Burlage and Langenhan are very timely and of considerable interest to all teachers in colleges of pharmacy, and of particular interest to those who teach the subject of pharmacy. How many of the professors of pharmacy will agree with Dean Briggs' statement that "the work included in the Syllabus outlined under 'Theory of Pharmacy and Pharmaceutical Technique' is overemphasized and is receiving an unwarranted amount of time and credit?" Rarely do we find the professor of any subject stating that the time devoted to the subject is in excess. We will all admire Dean Briggs for his outspoken attitude, but will we agree with his conclusions?—C. B. JORDAN, *Editor*.

THEORY OF PHARMACY AND ACADEMIC STANDARDS.

W. PAUL BRIGGS.*

The beginning of the academic year 1932–1933 marked a mile-stone in pharmaceutical education. After half a century of very questionable requirements in quality and quantity, pharmaceutical degrees were brought to a parity with accepted academic standards. The Bachelor's degree carries with it certain implications of learning as well as rights, privileges and responsibilities. The B.S. degree stands for a rather definite level of attainment in the various fields of knowledge. In most instances the Baccalaureate degree in any major division of knowledge is accepted as the equivalent of the same degree in any other division. Thus, through resolution, the Profession of Pharmacy has placed the educational requirements of future pharmacists on the same plane as Engineering, Law and other respected professions. But resolutions, traditional degrees and *laissez faire* methods will not succeed in creating or preserving respect for the B.S. in Pharmacy degree. . Such respect and acknowledgment can only be attained and preserved if the educational elements leading to this degree are sound and academically comparable to the elements forming the basis for other B.S. degrees.

Consider the traditional course usually titled "Theory of Pharmacy." It seems unnecessary to define this title or to describe its scope. Almost every college of pharmacy gives such a course, and the usual textbooks on Pharmacy devote from 168 to 256 pages discussing the theory of Pharmacy. The Pharmaceutical Syllabus requires 256 hours of Theory of Pharmacy, and Pharmaceutical Technique, which, the Syllabus recommends, should parallel each other. Without challenging the need for such instruction, for the moment, consider this fact; 192 didactic hours of Theory of Pharmacy and 64 laboratory hours of Pharmaceutical Technique, assuming that these courses measure up to established academic standards, would receive 13 $^1/_3$ credit (semester) hours, or over 10% of the usual 120 credit (semester) hours required for the B.S. degree. Bear in mind that this requires more time and more credit (semester) hours than Organic Chemistry and more than Botany and Physics together. Can this be justified academically? With due respect to the purposes of the Syllabus and to the objectives of pharmaceutical educators, I submit that it cannot be justified and further that when these

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two pharmacy courses and any other academic course are compared, the results will place pharmaceutical education on the defensive.

Over one-half (Sections B and C) of the outline in the Syllabus under Theory of Pharmacy deals with simple details which are necessarily considered in other courses. In discussing, for example, Sulphur or Alcohol under Theory of Pharmacy we are advised by the Syllabus to teach, ". . . .commercial phases . . incidents of historical importance . . nomenclature, official status, official uses, official preparations, classifications, pharmaceutical uses, methods of handling, preservation, etc." Sulphur and Alcohol, and every other item covered by Sections B and C of the Syllabus, under Theory of Pharmacy must be studied under some other course, such as Inorganic or Organic Pharmaceutical Chemistry. From an academic point of view these facts should be considered at the time these compounds are presented in the courses in Pharmaceutical Chemistry. It is probable that such information is now given in the courses in Pharmaceutical Chemistry, thus duplicating effort and needlessly consuming valuable time.

As to Sections A and D, I feel that the material suggested by the Syllabus is pertinent. However, it appears that tradition has been used as a yardstick rather than progress in developing Section A. The present-day student is educationally far advanced over those of fifty years ago, and Pharmaceutical practice has undergone far-reaching changes. Many students entering upon the study of Pharmacy to-day have had courses in High School Physics and Chemistry. Physics is recommended by the Syllabus, required by many colleges, and should be a part of the scientific training of all pharmacy students. With these conditions in mind, does it not seem that we are overemphasizing, under Theory of Pharmacy and Pharmaceutical Technique, the teaching of ". . . Heat, Evaporation, Solution, Crystallization," etc? This knowledge a student should certainly have but it is not necessary to devote two courses to teaching it. In his laboratory work in Botany, Chemistry, Physics and Pharmacy he actually carries out each of these processes, and does so with a definite objective. Such training is far more valuable than when done in an abstract manner. Preparing Fluidextract Belladonna leaves by percolation presents a vivid picture which is not soon forgotten, but packing a percolator with sawdust smacks of kindergarten methods.

I have discussed in detail the Syllabus outline for Theory of Pharmacy and Pharmaceutical Technique with the members of our Chemistry Department. It was found through this conference that every process and theory, outlined under Pharmaceutical Technique and Section A of Theory of Pharmacy, was actually employed in either the Chemistry or Pharmacy laboratory courses. The scope and methods of teaching General or Inorganic Chemistry have been fairly well fixed and in the majority of universities an 8-credit hour course of 2 lectures and 2, 3-hour laboratories per week for a year is given. No special course is given dealing with technique or process, but when a process is used for the first time, the instructor explains it, and the student proceeds immediately to employ the process to a definite objective. Now, if in teaching Chemistry, the student learns about filtration, precipitation, etc., and uses this knowledge as a means to an end, why in teaching Pharmacy, should the same processes and techniques be taught as Theory of Pharmacy? My answer is that we have been playing "Follow the Leader." Large books were written fifty years ago which attempted to cover

every phase of the practice of pharmacy. They were, in most cases, prepared for apprentices who never expected to attend College and who often possessed less than a grammar school education. To these young men the words filtration, precipitation, vaporization, etc., were terrifying and mysterious and they needed a simple description of the processes and techniques involved. But such is not the case to-day. Chemistry courses have shown us that freshmen students can work intelligently in the laboratory without spending 256 hours learning a few simple principles. A few pharmaceutical processes, such as drug extraction, may require more than superficial discussion and demonstration, but most of the work in Pharmaceutical Technique and Section A of Theory of Pharmacy, which is not covered in other courses, could be incorporated as a part of Operative Pharmacy. The old argument that repetition impresses facts upon students may be brought out in defense of the Syllabus. I would answer that argument with two questions. In what other academic courses is duplication resorted to? Are we willing to admit that pharmacy students, apart from all other university students, require repeated drilling in order to acquire knowledge? We should ask ourselves these two questions when we attempt to justify Sections B and C under Theory of Pharmacy. The propriety of Section D is granted but its position in the curriculum is questioned.

Personally, the best results have been obtained by combining the material covered by the Syllabus under Theory of Pharmacy, Pharmaceutical Technique and Operative Pharmacy, and deleting those parts here objected to. For these three courses the Syllabus requires a total of 448 hours. The set-up which has given satisfactory results is a 10-credit (semester) hour course of 96 hours of lecture and 192 hours of laboratory, a total of 288 hours, or $^1/_3$ less than recommended by the Syllabus for the three courses. In this course everything is carefully covered that the Syllabus includes under Operative Pharmacy. This work is preceded by lectures and demonstrations of the important features of Theory of Pharmacy and Pharmaceutical Technique, omitting those parts which are superfluous or which are adequately covered in other courses. Part D, under Theory of Pharmacy, which deals with the pharmacist as a member of the social order and in a professional status is omitted from this course, but is presented in Dispensing Pharmacy, where it seems to belong.

Results indicate that fundamental educational elements have not been slighted. The students complete the course with a wholesome respect for the work which they have done, they are not hurried and there is no evidence that any essential features of their training have been omitted. This is not offered with the idea that it is a perfect arrangement or that it should be universally adopted, but merely to support my personal views.

It may be that because of the professional background of pharmacy and because of the diversified knowledge which a pharmacist is expected to possess, we are justified in requiring an amount of educational training, in both hours and credits, in excess of the usual requirements for the B.S. degree. However, I cannot subscribe to this reasoning. When we offer a B.S. in Pharmacy degree we should compare it academically to a B.S. degree in Chemistry, Engineering, etc., and not to the purely professional degrees, such as D.D.S. or M.D. We have gone on record as approving an established degree for pharmaceutical education and

we should make our curricula conform to the established requirements for that degree. If we require an amount of work much in excess of 120-credit (semester) hours, examination of our curriculum, which is bound to come now that we are granting an academic degree, will raise a serious educational question. The answer will probably be either that our quality requirements are low or that the material of our curriculum does not warrant the credit or hours which we have assigned. By granting a purely professional degree we could avoid this inevitable analysis of our courses, but I most certainly would not recommend meeting the problem in that way.

In conclusion it seems to me that we need to carefully study our several courses, particularly Theory of Pharmacy and Pharmaceutical Technique, and adjust the time and credit evaluations on a sounder academic basis. Let me strongly emphasize here that I do not mean to minimize the necessity or value of these or any other Pharmaceutical courses outlined by the Syllabus. The issue which I raise is essentially a modernization of our traditional courses in the light of academic standards. In the hope of provoking discussion let me restate my stand; that the work included in the Syllabus outlines under Theory of Pharmacy and Pharmaceutical Technique is overemphasized and is receiving an unwarranted amount of time and credit (semester) hours; and, that the entire four-year course in Pharmacy can and should be brought in line with other baccalaureate degree courses in terms of clock hours and credit (semester) hours.

THEORY OF PHARMACY AND ACADEMIC STANDARDS.

A DISCUSSION OF A PAPER BY THIS TITLE PRESENTED BY W. PAUL BRIGGS.

BY HENRY M. BURLAGE.*

In discussing Dean Briggs' paper I wish, first of all, to congratulate him on his efforts and to say that, on the whole, I agree with the content and intent of such discussion. There is no doubt in anyone's mind that the adoption of the minimum four-year course by the colleges of the Association has cast upon the educators in the Profession of Pharmacy new responsibilities. Now that such a course has been obtained after years of struggle and planning, these educators should not sit back with an air of complacency but should direct new efforts to modernizing, stabilizing and unifying a curriculum which was established to meet an unfortunate two- and three-year requirement and as a result has been haphazard in its structure. I am glad to note that Dean Briggs sets forth in part the responsibilities accompanying the new "mile-stone in pharmaceutical education."

In his discussion, the author has singled out those sections of the Pharmaceutical Syllabus, which in my own mind are of greatest importance in our pharmaceutical curriculum in building a theoretical and professional background. It probably would have been much better if the various subdivisions of Theory of Pharmacy, Technique and Operative Pharmacy had been outlined as separate

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courses to clarify a confusing situation, especially as to time allotment. This latter fact is evidenced in a study of the curricula and courses of the various member colleges. The greatest thought and consideration should be given to these Sections.

With regard to Sections B and C under Theory of Pharmacy (Syllabus, pages 113–117) there certainly is much in the outline that needs changing to avoid unnecessary duplication. These divisions should be developed still further to include work that is not given in basic courses of General Chemistry (Inorganic Pharmaceutical Chemistry) or Organic Chemistry (Organic Pharmaceutical Chemistry). The courses in chemistry, if basic, cannot certainly give the important aspects of the inorganic and organic medicaments and their requirements, standards, etc. Section B should include non-repetitious material about the official inorganic compounds, studying them from the angle of their periodic classification—not alphabetically as is usually done—accompanied by laboratory work performing the necessary U. S. P. tests and more especially preparing and studying the official preparations involving chemical reactions of these substances. Certainly such course content cannot be presented adequately in a course in General Chemistry of Pharmaceutical Chemistry of a basic character.

Section C should likewise be given after a basic course in Organic or Organic Pharmaceutical Chemistry stressing the official organic drugs and principles and finally, but of rapidly increasing importance, ethical New and Nonofficial Remedies of this character. One needs also only to step behind the prescription counter of the average pharmacy to learn immediately the growing importance and value of a knowledge of medicines of organic character, especially from the dispensing standpoint.

Section A appears as an example where, as the author says, "tradition has been used as a yardstick rather than progress in developing this course." There may be overemphasis and duplication in the teaching of "Heat, ..." but there appears to be a need of a modernized course in technique (or whatever one wishes to call it), which although it might appear simple in its make-up but necessary in curricula in sections of the country, where many of the high schools are small—where one teacher gives instruction in more than one subject with the result that one cannot depend too greatly on the student's knowledge of the simplest processes and theories. Physics and Chemistry are, no doubt, much better presented in the large city high schools and Dean Briggs' statements in this regard would apply to those Pharmacy schools drawing students from the large and well-equipped high schools.

Dean Briggs' statement that every process and theory outlined under Pharmaceutical Technique and Section A of Theory of Pharmacy was actually employed in the chemistry and pharmacy laboratory does not apply to the situation in most schools. It is true that many of the processes should be and are studied or mentioned in General Chemistry. However, in most of the State institutions this subject is taught to the masses in large laboratory and lecture sections with the result that they know little or nothing about the practical applications of processes, the theories and the practices of the same. As a whole they appear as a poorly trained lot, who are only capable of using a laboratory manual of specific directions efficiently. If the processes mentioned are grasped by the students of pharmacy in

other courses as Chemistry and Physics, there certainly is no need of them in our curricula, but I fear that such a fortunate condition does not obtain if my observations in four institutions located in widely separated sections mean anything.

I cannot agree that the material in the Syllabus under Theory of Pharmacy, Technique and Operative Pharmacy can be covered in one course of 10 semester hours, but should be in 400–432 hours (18–19 semester hours) including Technique (48 + 64 = 112), Galenical Pharmacy (64 + 96 = 160), Pharmacy of Inorganic (32 + 48 = 80) and Organic Materials (48 + 0 = 48 or 48 + 32 = 80) providing the material in the last two subjects named is not given in Organic Pharmaceutical Chemistry of a non-basic character. This with at least 10 semester hours of Dispensing (totaling 28–29 hours) is equivalent to about 25% of the total hours required for a B.S. degree. For the same degree in Chemistry, basic courses equivalent to about 35 semester hours are required. There is no question that Part D of Theory of Pharmacy can be adequately placed in other sections.

The author indicates that the textbooks of Pharmacy are too voluminous because of conditions mentioned; it appears that there is a dire need of revising these costly texts into books of a more theoretical nature rather than copies (to a great part) of the U. S. P. and N. F. A comparison with the later editions of English texts show some interesting differences as to presentation of pharmaceutical theory and subject matter.

I agree with Dean Briggs that we are not justified in requiring more than the usual 120 semester hours for a B.S. degree, and in order to stay within these bounds it behooves us to examine our curricula and course contents very closely, in order to withstand and avoid critical examination.

One value of this paper to my mind is the fact that it presents an idea that worthy work might be done in this Conference by devoting a portion of each annual meeting to a very serious and critical examination of course content, distribution, etc., using the Syllabus as a possible starting point with an idea of developing the pharmacy courses so that they might be of the greatest value in developing the knowledge and pride of the student of pharmacy in his profession.

THEORY OF PHARMACY AND ACADEMIC STANDARDS.

A DISCUSSION OF A PAPER BY THIS TITLE PRESENTED BY W. PAUL BRIGGS.

BY H. A. LANGENHAN.*

If you will define Pharmacy (Practical) as the application of the knowledge and training in Physics, Chemistry, Botany, Therapeutics, etc., *to the making of medicine*, you may readily realize that too much time is not given to this subject in any college.

The Syllabus outline is to help, in part, those who are not qualified to teach this subject, and those who do not understand what it is about, who naturally wonder what they should teach and why the subject is listed. Practical Pharmacy is not a special subject; it is a *specialized general subject.*

In order to teach in this broad field a foundation in all of the prerequisite

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fields is necessary. The instructor must be sufficiently versed in Physics in order to demonstrate and explain the applications of this field to pharmaceutical operations and methods. He must be able to explain the application of colloidal chemistry in manufacturing, such as extraction emulsification, incompatibility, etc., the application of p_H in connection with preservation, incompatibility, etc. His training in organic and plant chemistry must be broad so that he may discuss the stability or instability of alkaloids, oils, glucosides and other plant constituents in galenical preparations, and the ever-present problem of incompatibility of these substances.

The question of solvents, vehicles, flavors, coloring agents all call for special information to be applied to the making of medicines. The applications of therapeutics and pharmacognosy are important.

The scope of the field of Practical Pharmacy as an applied subject is enormous. One could go on and on citing "applications" of these fundamental subjects.

Up to the present time pharmacy instructors have not been especially trained for this work, but have been compelled to develop their own course of instruction. The type of instruction given is influenced by preliminary training and by the fundamental training of the students entering the classes. It calls for a well-correlated curriculum and a coöperative faculty in order to properly qualify the student in these subjects so that the pharmacy instructor need not teach chemistry, materia medica and other fundamentals, but may devote his entire time to *application* of these fundamentals to the "making of medicine."

In discussing for example, Arsenical Solutions, the instructor should develop the history of arsenicals in general, the pharmacopœial (U. S. P. and foreign) development, the chemistry, the manufacturing, therapeutics, incompatibility, dispensing and correlate this summary with the story of the new arsenic remedies now in use. A skeleton outline of this single subject will indicate the various fundamental fields required for a fair understanding of the subject.

One serious handicap for pharmacy is the teaching of pharmacy students by non-pharmaceutical and non-coöperative teachers, in these fundamental subjects. With the proper preparatory instruction the student is ready for the pharmacy instructor who, if qualified, will find that he has insufficient time in any of the present existing curricula to cover the entire applied field. This application of fundamentals is not repetition, no more than advanced German is a repetition of beginning German. I will not be at Washington, so offer this material for you to present as personal property or any way you wish.

DRUG SALES SCHOOL.

Salesmen calling on the drug trade attest to the success of the Sales School of the Detroit Retail Drugists' Association.

An official of the Association said that repeatedly he has been informed that stores are taking on new appearances. Probably the greatest change is the quick appearance of attractive open displays, in many cases the addition of island displays in the store. Other stores have faced a general clean-up, new store arrangement and display material.

The success of the first school on drug store merchandising has led the Association to plan for another year. It is probable that next year the school will coöperate more closely with the pharmacy departments of local colleges should local druggists show sufficient interest to attract the sponsoring of lecturers. The final two sessions found an increasing attendance.—*Detroit News Booster.*

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

ARTICLE III of Chapter VII reads: "The objects and aims of local branches of this Association shall be the same as set forth in ARTICLE I of the Constitution of this body, *and the acts of local branches shall in no way commit or bind this Association, and can only serve as recommendations to it.* And no local branch shall enact any article of Constitution or By-Law to conflict with the Constitution or By-Laws of this Association."

ARTICLE IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meeting of the Local Branches shall be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten with wide spaces between the lines. Care should be taken to give proper names correctly and manuscript should be signed by the reporter.

CHICAGO.

The 226th meeting of the Chicago Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held January 15, 1935, at the University of Illinois College of Pharmacy.

The speakers of the evening were, Dr. D. L. Tabern, Research Chemist, and H. C. Struth, Pharmacologist, of the Abbott Laboratories. They discussed "Recent Developments in Hypnotics."

Dr. Tabern gave a short history of the development of the barbiturates and their increased use. The barbiturates were classed as a veritable gold mine for the organic chemists. They are of interest to the physician and pharmacist; the speaker pointed out that they are being used so much to-day and there are many with different actions.

Lantern slides were shown and Dr. Tabern discussed the chemistry of such well-known barbiturates as Ipral, Allonal, Dial, Neonal, Amytal, Evipal, Nembutal, Pernocton, Ortal, Phenobarital and Barbital, showing the effects caused by changing and adding chemical groups to the basic formula. About 95% of these are given orally, others are given hypodermically or rectally.

Mention was made of combining the barbiturates with amidopyrine, of marketing them in cough syrups to take the place of codeine and used in conjunction with ephedrine.

Mr. Struth took up the discussion at this point and outlined the methods of calculating the sleep-producing power of barbiturates.

Albino rats are injected subcutaneously with the sodium salt of the compound. The minimum lethal dose and minimum effective dose is determined. Sleep in these experiments is taken as the stage where tickling in the ear with a small prod will produce no effect. These results are not taken as a clinical parallel, but only as a guide.

Albino rats were injected and the tests were run by Mr. Struth as a practical demonstration for the large group assembled.

Dr. Tabern resumed the discussion, showing charts giving a graphic comparison of the minimum lethal dose, minimum effective dose and safety margins of the popular barbiturates. The comparisons were made with barbital and a chart was also shown that compared the length of drug duration.

Mr. Struth took up the discussion and demonstration at this time and injected three rabbits intravenously with the sodium salts of barbital, evipal and nembutal.

A discussion relative to the elimination of the compounds showed that some are eliminated unchanged in the urine while others are detoxified in the liver. No damaging effects on the liver have been reported at this time.

At the close, the practical uses of the barbiturates were outlined. Phenobarbital was named a specific for epilepsy, a property peculiar unto itself. Other uses of the compounds mentioned were, as an antidote for strychnine poisoning, as an antidote for local anesthetics such as

cocaine, as a hypnotic, in rare cases as a general anesthetic and for pre-medication for a general anesthesia.

LAWRENCE TEMPLETON, *Secretary.*

NEW YORK.

The January meeting of the New York Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held on the evening of January 14, 1935, in the College of Pharmacy, Columbia University. About thirty members and their guests attended.

The meeting was called to order by President Ballard and the report of the secretary was read and approved. The treasurer's report showed a balance.

The secretary reported that the application of Mr. Harry Kaye for membership in the AMERICAN PHARMACEUTICAL ASSOCIATION had been forwarded to Secretary Kelly.

Chairman Schaefer, of the Committee for the Fischelis Dinner presented his report giving a complete outline of all disbursements and receipts. His report appears in the files of the secretary and showed a net surplus of $2.79. Dr. Ballard thanked Dr. Schaefer on behalf of the New York Branch for the fine service he had rendered in managing so successful a testimonial dinner for Dr. Robert P. Fischelis. Dr. Bilhuber made a motion expressing the thanks of the Branch to Dr. Schaefer. The motion was seconded by Mr. Steiger.

Chairman Lehman, of the Committee on Education and Legislation, then reported the following:

"Beginning January 9, 1935, the National Industrial Recovery Board has been holding hearings on the question of 'Price Fixing' as exemplified in various Retail Codes. The outcome is awaited with great interest and anxiety, especially by the retail drug trade.

"The General Wholesale Code Authority started its meetings at the Mayflower Hotel on January 8, 1935, in reference to amendments to the codes and adoption of codes for industries not coded. The Wholesale Drug trade was not included in this hearing.

"The Federal Alcohol Control Administration is seriously considering the interpretation of the Distillers' Code which will have the effect of limiting the sale of alcohol to the retail druggists in glass containers not exceeding 1 gallon, such containers not to be used a second time. This is objected to by the representatives of the Retail Drug Trade, as it will add considerably to the cost, not only of the alcohol but of the preparations made therefrom, especially in New York State, where alcohol can only be sold to the public on a physician's prescription.

"On January 4th, Senator Copeland introduced S. 5, a bill superseding the Tugwell Bill S. 2800, and said to require formula disclosure or filing the formula with the Secretary of Agriculture. Therapeutic claims are to be substantiated by competent medical authorities in every particular; the bill empowers the Secretary of Agriculture to make regulations having the force and effect of law: in the case of habit-forming drugs it empowers the Secretary to determine what drugs are habit-forming. Cosmetics are included with articles of food and drugs in the bill.

"Representative Treadway will introduce early in the session a bill calling for a 2½% manufacturers sales tax. This tax will no doubt be passed on to the long suffering retailer in pyramided form, and should be opposed by the drug trade.

"The Bureau of Narcotics is endeavoring to have introduced in some thirty-six states the uniform Narcotic Law, similar to the Harrison Act and the New York State Narcotic law.

"The Retail Drug Code Budget has been approved, with appropriate provision for the federal and local authorities. In New York City collections have begun: $1.00 for every registered person employed or non-registered if employed in the drug department for 60 hours or more weekly. Payment is mandatory.

"News from Albany indicates that a bill is to be introduced which will provide that all restaurants in drug stores must be enclosed in a separate room."

Mr. Lehman was then called upon to present his report as chairman of the Committee on Nominations. This report was as follows:

"To the members of the New York Branch of the American Pharmaceutical Association—

"Your committee on nominations begs to submit the following nominees for office for the year 1935: *President,* Charles W. Ballard; *Vice-President,* Frederick C. A. Schaefer; *Secretary,* Rudolf O. Hauck; *Treasurer,* Turner F. Currens. *Committee Chairman: On Audit,* Ernst A.

Bilhuber; *Education and Legislation*, Robert S. Lehman; *Membership*, Cosmo Ligorio; *Professional Relations*, James H. Kidder; *Progress of Pharmacy*, Leonard W. Steiger; *Secretary, Remington Medal Committee* and *Delegate to the House of Delegates*, Hugo H. Schaefer.

(Signed) { ROBERT S. LEHMAN
ERNST A. BILHUBER
LEWIS N. BROWN.

Following the reading of this report, Dr. Schaefer moved that it be received; seconded. President Ballard then called upon Dr. Schaefer to take the chair during the election. Mr. Dworkin moved that the secretary cast one ballot unanimously electing the nominees; seconded and approved. The secretary cast the ballot accordingly.

Dr. Ballard then resumed charge of the meeting and expressed his thanks.

The application of Mr. Edward A. Wickam for membership in the New York Branch was received and approved.

Before introducing the speaker of the evening, President Ballard called attention to the unfortunate circumstance that midterm examinations were being held in the College of Pharmacy this week and that another meeting was to take place the following night. This combination of circumstances had adversely affected the usually good attendance and the president expressed regret to the speaker that more members were not present.

President Ballard then introduced William A. Lott of the Research Laboratories of E. R. Squibb & Sons, Inc.

Mr. Lott spoke on the "Rational of Chemo-Physiological Research." He began by pointing out the intensive research conducted before a new chemo-therapeutic agent is put on the market. He called attention to the three prime requisites of a satisfactory product. *First*, that it have high activity; *secondly*, low toxicity, and *thirdly*, no pernicious or undesirable effects. From the theoretical viewpoint, he indicated that progress had been made in determining what chemical groups were responsible for particular physiological actions. In this regard considerable work had been done in the research laboratories. He then discussed some of the open chain hydrocarbons of both the saturated and unsaturated series and indicated how the narcotic power increased with increasing molecular weight.

He spoke of the influence of the substitutions of the OH—groups. Passing on to the compounds of the aromatic series; he explained the influence of the phenyl groups and aromatic amines, and closed with a presentation of a theory of narcotics which had been more recently developed.

A rising vote of thanks was accorded the speaker.

RUDOLF O. HAUCK, *Secretary*

NORTHERN NEW JERSEY.

The regular January meeting of the Northern New Jersey Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the Rutgers University College of Pharmacy, Newark, on Monday evening, January 21st, with President Ernest A. Little presiding.

William L. Sampson, assistant professor of Biochemistry, Rutgers University College of Pharmacy, and member of the staff of the Merck Institute of Therapeutic Research, addressed the members of the branch on the subject of ascorbic acid. The speaker traced the early history of the disease of scurvy among sailors on long sea voyages, soldiers campaigning in foreign lands, prisoners confined in jails, and even the populace of the larger cities of the world. He told how investigators as early as 1752 found that scurvy was due to a dietary deficiency and could only be cured by the addition of fresh vegetables and fruits to the diet. Bringing the study down to the present day, Professor Sampson outlined the research which led to the isolation of the principle contained in fresh vegetables and fruits which cured scurvy and its natural and synthetic production in suitable form for medicinal use.

Professor George C. Schicks presented the report of the Committee on Professional Relations in which he outlined the work being carried on by a joint committee composed of the Committee on Medical Practice of the Medical Society of New Jersey and the Committee on Professional Relations of the New Jersey Pharmaceutical Association which has as its goal the publication of a New Jersey Formulary.

The meeting was well attended and members joined in the discussion of the committee reports and the address of Professor Sampson.

C. L. Cox, *Secretary.*

PHILADELPHIA.

The December meeting of the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the Philadelphia College of Pharmacy and Science on Tuesday evening, December 11, 1934.

The minutes of the previous meeting were read and approved, and President Barol introduced Dr. Arno Viehoever, Research Professor of Biology at the College, as the speaker.

His topic concerned the action of organic cathartics and recent developments in standardizing their activity. A micro-projection of a living daphnia was shown with the intestine and glands impregnated with a vital stain, facilitating the study of these organs.

Graphic formulas for substances such as Emodin, chrysophanic acid and aloe-emodin were placed on the blackboard, and an explanation made concerning the difficulty of chemical analysis of them. Dr. Viehoever then presented a series of graphs showing quantitatively the effect of aloin and aloin residue on the intestinal activity of the daphnia, stating that positive quantitative results were obtained. A moving picture of the progressive activity of a solution of cascara sagrada showed the laxative effect on the daphnia.

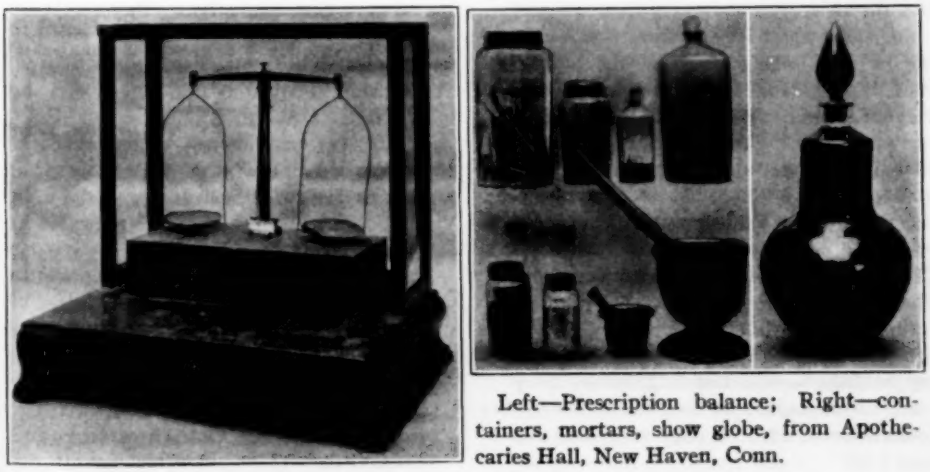
Dr. Viehoever gave brief explanations of the effects on dogs and daphnia of the following drugs: Aloin, cascara, senna, rhubarb and podophyllum. The effect of the toxic substances in podophyllum was demonstrated.

Experiments showing the relative amounts of mucilage released from cathartic drugs, such as psyllium seeds and certain patented mucilaginous cathartics, were performed.

At the close of the lecture Dr. Viehoever showed lantern slides of former workers in biological subjects and suggested that their work should be checked and verified instead of taking their discoveries as facts.

E. H. MACLAUGHLIN, *Secretary.*

Pharmacist John Cameron, member of the AMERICAN PHARMACEUTICAL ASSOCIATION, favored us with a copy of the Formulary published by the Committee on the Hospital of the Peiping Union Medical College. The Formulary consists for the most part of drugs and preparations official in the Chinese Pharmacopœia or contained in the "New and Nonofficial Remedies." It is a book of 70 pages.



Left—Prescription balance; Right—containers, mortars, show globe, from Apothecaries Hall, New Haven, Conn.

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1934–1935.

Office of the Secretary, 2215 Constitution Ave., Washington, D. C.

LETTER NO. 11.

January 18, 1935.

To the Members of the Council:

54. Committee on Maintenance. In accordance with Motion No. 6 (Council Letters No. 6, page 1149; and No. 7, page 1244) the note for $40,000.00 held by the Maryland Trust Company was paid in full on December 31, 1934.

55. Contract for Printing, Binding and Distribution of the Year Book, Volume 22. Motion No. 14 (Council Letter No. 8, page 1246) has been carried and the contract has been awarded to the Lord Baltimore Press, Baltimore, Md.

56. Contract for Printing and Mailing the Journal of the A. Ph. A. for 1935. Motion No. 17 (Council Letter No. 10, page 66) has been carried and the contract has been awarded to the Mack Printing Company, Easton, Penna.

57. Use of Text of the N. F. Motion No. 15 (Council Letter No. 8, page 1246) has been carried and the J. B. Lippincott Company have been advised.

58. Budget for 1935. Motion No. 18 (Council Letter No. 10, page 68) has been carried and the budget for 1935 is approved.

59. Selection of Auditors. Motion No. 19 (Council Letter No. 10, page 68) has been carried and W. A. Johnson & Co. have been employed to audit the accounts of the Association for 1934.

60. Appropriation for Maintenance of Building for 1934. In submitting the budget for 1934, it was stated that the expenses of maintenance could not be estimated and the budget carried $1800.00. In submitting the budget for 1935, it was stated that as soon as the expenses for maintenance for the year were known a motion to increase this appropriation would be submitted, in accordance with Article II of Chapter II of the By-Laws of the Council. The expenses have totaled $3227.29.

(Motion No. 21) It is moved by Kelly that the appropriation for the maintenance of the Building for 1934 be increased to $3300.00.

61. Headquarters for the 1935 Meeting. See Council Letters No. 4, page 945; and No. 6, page 1150.

Local Secretary Mickelsen has advised that the Idaho Pharmaceutical Association has decided to join with the Oregon and Washington Associations in holding their annual meetings for 1935 in Portland, and on Monday and Tuesday of the week of the A. PH. A. meeting.

The following is quoted from his letter:

"I am very pleased to inform you that plans and arrangements for the 1935 meeting at Portland, Oregon, in my opinion, have been arranged very satisfactorily.

"A meeting of the A. PH. A. Branch was held at the College on December 4th and it was unanimously voted that the A. PH. A. Branch assume all responsibility of financing the national convention. On Wednesday, December 5th, a joint meeting was held with the Oregon State Pharmaceutical Association, Portland Retail Drug Association and the A. PH. A. Branch. During this meeting it was decided that the tri-state convention members: namely, Oregon, Washington and Idaho, would officially close their meeting Tuesday evening in time to join with the A. PH. A. and hold a joint banquet and dance. This should be an ideal arrangement for our convention. Undoubtedly a number of retail pharmacists attending our banquet and dance will remain for the remaining meetings of the convention. Buyer's Week will in no way interfere with our meeting. This leaves the remainder of the week from Tuesday to Saturday free for business and activity for A. PH. A. members.

"It was unanimously voted that the convention dates be set for the week of August 5th to 10th, inclusive, and I hope that this will meet with the approval of your Council.

"I was given the authority to appoint a convention committee to take charge of A. PH. A. arrangements. The following members were appointed: George L. Haack, *Chairman;* F. C. Felter, *Publicity Chairman;* Frank Nau; Earl Gunther; Edgar Stipe; Fred Geue, *Treasurer;* and Fred Grill. This committee met at the

Multnomah Hotel, December 7th and we wish to recommend that the Multnomah Hotel be chosen as Headquarters for our 83rd annual meeting. The hotel management assured us of every hospitality, good food and coöperation in every way possible to make our convention a success. In other words, the hotel is really turned over to A. PH. A. activities during that week. The arrangement of the Hotel on the mezzanine floor is ideal for convention meetings. Aside from this, the Multnomah has a banquet hall which is suitable for six hundred guests and in an emergency, one thousand.

"The enthusiasm of our convention seems to have regained the momentum it lost for a while, and I feel confident that the A. PH. A. has a real reception in store.

"It is also planned to appoint state auxiliary committees from Washington, Idaho, Oregon, Montana and California. The purpose of these auxiliary committees will be to stimulate interest in our convention and to get additional members for our association."

(*Motion No. 22*) *It is moved by Kelly that the Hotel Multnomah, Portland, Oregon, be approved as the headquarters for the 1935 meeting of the A. Ph. A.*

62. Time of the 1935 Meeting. It will be noted that parts of Local Secretary Mickelsen's letter as quoted above, refer to the time of the meeting.

Only two letters were received in response to the request for comments or suggestions with respect to the time of meeting, as made in Council Letter No. 4, page 945, and these were not quoted earlier pending the receipt of the final recommendation from the Local Committee.

The following quotations are from a letter from President Fischelis:

"I think it is important for the Council to give consideration to the following points in deciding upon the time of the meeting:

"Are we interested in well-attended meetings of the AMERICAN PHARMACEUTICAL ASSOCIATION, or do we merely want a crowd? I ask this question because past experience will show that on Monday and Tuesday of the convention week members of faculties of Colleges of Pharmacy and members of Boards of Pharmacy are in attendance in large numbers. Tuesday night of the convention week is the high point in attendance. Beginning Wednesday, members of Boards of Pharmacy and College faculties start to leave, and by Friday a mere handful of persons is in attendance at the most important sessions of the AMERICAN PHARMACEUTICAL ASSOCIATION.

"The Buyers' Week will undoubtedly attract a great many retail druggists to Portland, as will also the meetings of the State associations which are scheduled for Monday and Tuesday. Under the proposed arrangement you will add to the heaviest days of the convention week additional attendance of members of the State associations and those who are coming for the Buyers' Week. It will look like a tremendous convention on Monday, Tuesday and Wednesday. On Thursday and Friday, when the main business of the Association is conducted, you will have only the old standbys to rely on.

"Of course, if all of the members of the State associations scheduled to meet on Monday and Tuesday were members of the AMERICAN PHARMACEUTICAL ASSOCIATION, the situation might be different. What will happen on Monday and Tuesday is that some members of the State associations will drift into the meetings of the American Association of Colleges of Pharmacy or of the National Association of Boards of Pharmacy, thinking that they are meetings of the AMERICAN PHARMACEUTICAL ASSOCIATION, and they will be very much disappointed in the discussion which they will hear because the chances are they will be on technical matters in which the average retail druggist has little or no interest. On the strength of this these retailers will decide that it is useless to stay over for the balance of the week.

"We all know that meetings of the AMERICAN PHARMACEUTICAL ASSOCIATION are already overcrowded with respect to events and specialized meetings, and considerably undermanned with respect to attendance.

"Unless there is a much better reason than the mere presence of a large number of people milling around in the headquarters hotel, I would strongly urge the selection of the week of August 12th in preference to the week of August 5th."

Mr. Philip wrote as follows:

"Reviewing the letter received from Dean Mickelsen of Portland, Oregon, and thinking over other information received concerning Buyers' Week which is to be held in Portland during the week of August 5, 1935, one of the weeks contemplated by the AMERICAN PHARMACEUTICAL ASSOCIATION officials to hold their annual Convention in Portland, I think that the ASSOCIATION meeting will be more successful if the earlier week in August is accepted even though this week would be concurrent with Buyers' Week in that city.

"It so happens that the University of California opens early in August. If we expect any attendance from that nearby group, a later date in August would conflict with those who are interested in the University of California activities.

"I have come to the conclusion that those who attend only part of the Convention are not affected by outside entertainment or special conditions.

"If our weekly program were reversed, those people who come to the Convention and stay only Monday and Tuesday, would change their plans and not arrive at the Convention until Thursday and then leave Friday."

(*Motion No. 23*) *It is moved by Philip that the week of August 5 to 12, 1935, be approved as the time for the 1935 Meeting.*

LETTER NO. 12.

To the Members of the Council:

63. Committee on the Proposed Council on Pharmaceutical Practice. President Fischelis has called attention to the omission from *Motion No. 16* (Council Letter No. 9, page 66) of the recommendation of the Committee (see page 65) that a Council on Pharmaceutical Practice be established. No further comment has been received.

A vote is now called for on the motion as follows:

(*Motion No. 24*) *It is moved by Fischelis that the report of the Special Committee on the Proposed Council on Pharmaceutical Practice be received, that the Council approve the establishment of a Council on Pharmaceutical Practice to be conducted under the auspices of the American Pharmaceutical Association with personnel as recommended by the Special Committee, and that the Special Committee be continued for the purpose of developing the plan in conjunction with the Council on Pharmaceutical Practice and report at the Portland meeting.*

64. Appropriation for Maintenance of Building for 1934. Motion No. 21 (Council Letter No. 11, this issue of the JOURNAL) has been carried and the appropriation is increased.

65. Headquarters for the 1935 Meeting. Motion No. 22 (Council Letter No. 11, this issue of the JOURNAL) has been carried and the Multnomah Hotel is approved as the headquarters.

66. Time for the 1935 Meeting. Motion No. 23 (Council Letter No. 11, this issue of the JOURNAL) has been carried and the week of August 5th–12th is approved as the time for the meeting.

67. Use of the Text of the N. F. V. Mr. Morris Dauer, Ph.G., Chief Pharmacist, Kings County Hospital, Brooklyn, N. Y., has requested permission to partially reproduce the text of the N. F. V in a Medical Formulary and Prescription Manual. After correspondence with Mr. Dauer as to the extent the text would be reproduced, Chairman DuMez of the Committee on Publications writes:

"In response to your letter of the 17th instant, I am pleased to note that Mr. Dauer does not intend to publish complete working formulas in his Formulary for Physicians. I, therefore, recommend to the Council that permission be granted Mr. Dauer to use portions of the text of the National Formulary in the preparation of his Formulary for Physicians, providing he does not publish complete working formulas, and that permission also be granted for the use of National Formulary titles in the posological table to be included in the book. For this privilege I recommend further that the usual fee of $5.00 be charged."

(*Motion No. 25*) *It is moved by DuMez that permission be granted to Mr. Morris Dauer to use the text of the N. F. V for partial reproduction in his Formulary for Physicians under the usual conditions and at the usual charge of $5.00.*

68. Life Membership. The following became Life Members during 1934 through the payment of dues for 37 consecutive years: William L. Cliffe, Jesse L. Hopkins, Robert S. McKinney and Frank X. Moerk.

The following became Life Members during 1934 through the payment of a fee: Gustav

Bachman, Zada M. Cooper, Frank R. Eldred, Roland E. Kremers, Henry A. Langenhan, Martin Larson, Rufus A. Lyman and George S. Morgan.

69. Year Books for the Library of Congress. Dr. Herbert Putnam, Librarian of Congress, through the Chief Division of Accessions has requested that the Association donate copies of the YEAR BOOKS, Volumes 1–5, 7–12, 14–21 for the files of the National Library.

The request was referred to Dr. A. G. DuMez of the Committee on Publications who writes:

> "It is stated that it is my personal opinion that a full set of the YEAR BOOKS of the AMERICAN PHARMACEUTICAL ASSOCIATION should be in the Library of Congress, and as most of the books contained in that library have been donated I can see no good reason why the AMERICAN PHARMACEUTICAL ASSOCIATION should not donate the numbers requested by the Librarian of that institution. If my memory serves me correctly, we donated almost a complete set of the YEAR BOOKS to the Creer Library not so long ago, which should serve as a precedent for us to follow in this case."

(*Motion No. 26*) *It is moved by Kelly that Volumes 1–5, 7–12, 14–21 of the Year Books of the Association be donated to the Library of Congress.* A vote on this motion will be called for.

70. Bequest by Dr. Frederick B. Kilmer. Newspapers and other publications have carried the statement that the will of Dr. Kilmer includes a bequest of $3000.00 as a trust fund to the AMERICAN PHARMACEUTICAL ASSOCIATION, the income from which is to be applied, in the form of a prize, to the rewarding of meritorious work in pharmacognosy. So far, no official report has been received.

E. F. KELLY, *Secretary.*

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EDITORIAL NOTES

AN UNFORTUNATE ERROR.

A patient at the George Washington University Hospital lost her life as a result of administration of formaldehyde. This brief mention of the unfortunate error is made, as statements regarding the occurrence differ. The coroner's jury placed the responsibility for the error on the pharmacist (Miss Blannie Bennet), however, other information differs from the findings. The latter stated that the 5-pound bottle from which she poured the solution was new and bore a paraldehyde label. Another patient in the same section suffered from the same poisoning, but recovered.

PUBLIC HEALTH PROFESSORSHIP.

The first professorship in public health has been established in the University of Munich. Professor Dr. Schultze, the new state commissioner for public health in Bavaria, has been appointed lecturer. In his inaugural he pointed out first the negative side of his professorship; namely, combating the errors in medicine due to specialization. The problems of the new discipline in science are, as he stated, racial supervision, dwelling and colonization problems, social insurance and determination of the useful in folk remedies, the single great objective being that public health is political power.

IMPERIAL BOTANICAL CONFERENCE.

An Imperial Botanical Conference, commencing on August 28th and lasting two or three days, will be held in London this year. The subjects set down for discussion are of general interest to Empire botanists. The *Kew Bulletin*, in announcing the Conference, hopes that it will furnish a convenient meeting ground for home and overseas botanists who are on their way to attend the International Botanical Congress which meets at Amsterdam in the week following. The Director of the Royal Botanic Gardens, Kew, is the chairman of the Organizing Committee of the Conference, and the honorary secretary is Professor W. Brown, Imperial College of Science and Technology, South Kensington, London, S. W. 7, from whom further particulars may be obtained.

FOURTH INTERNATIONAL HOSPITAL CONGRESS IN ROME.

The International Hospital Association announces that the fourth International Hospital Congress will take place in Rome from May 5–12, 1935. The Italian Government has extended a most cordial welcome to the Association, so that the visit to Rome is assured of being a most memorable one in every respect. The full program, giving all details of the Congress and of the study trips which will take place before and after the Congress, will be issued within a few weeks. The International Hospital Association requests government health departments, national associations and the press to give publicity to the Congress and to encourage a large attendance. The Association also expresses the hope that all who are interested in its work will endeavor to fit the Congress into their program of travel for 1935.

VACATION COURSES OF THE UNIVERSITY OF HEIDELBERG.

The University of Heidelberg has provided vacation courses for those from foreign countries who desire to take part in one or the other of these special courses.

AUSTRIAN PHARMACEUTICAL SOCIETY.

The Austrian Pharmaceutical Society held its annual session in its building in Vienna. The usual order of business was carried out. Among the addresses was one by Professor Dr. H. Mark. The secretary of the organization is Dr. Hans Heger and the honorary president is Dr. Richard Firbas.

CENTENNIAL CELEBRATION AT TULANE.

The one hundredth anniversary of the establishment of Tulane University of Louisiana School of Medicine, New Orleans, was commemorated in a program sponsored by the Orleans Parish Medical Society, January 7th. This observance is a forerunner of the celebration planned by the University in June for three or four days, culminating on commencement day, June 12th. The recent program marked the actual day of its founding, the first Monday in January, 1835. The history of the institution was reviewed by Mayor T. Semmes Walmsley, and Drs. Charles C. Bass, dean, Waldemar R. Metz, Albert E. Fossier and Randolph Matas.

PERSONAL AND NEWS ITEMS.

THIRTIETH ANNIVERSARY OF THE COUNCIL ON PHARMACY AND CHEMISTRY.

On February 11th, the Council on Pharmacy and Chemistry completed its thirtieth year of service. During the greater part of this period, our late fellow-member, W. A. Puckner, served as its secretary. The present secretary of the Council is Dr. Paul Nicholas Leech, a member of the AMERICAN PHARMACEUTICAL ASSOCIATION. President R. P. Fischelis sent a congratulatory telegram to the American Medical Association.

TWELFTH INTERNATIONAL CONGRESS OF PHARMACY.

The 12th International Congress of Pharmacy is to be held in Brussels, July 30th, to August 5, 1935, under the auspices of the International Pharmaceutical Federation, Belgium Pharmaceutical Association and the Pharmaceutical Society of Anvers. Pharmacist J. Breugelmans of Brussels, *Secretary*, states that an invitation has been extended to the U. S. Government to be represented and pharmacists of the United States are invited. Further information will later be mailed the JOURNAL. Entertainment features and plans for visitations have been arranged. Those contemplating to attend should address Dr. J. Breugelmans, General Secretary, 3 rue du Government Provisoire, Brussels, Belgium. Further information will be given in a succeeding number of the JOURNAL.

BULLETIN OF THE INTERNATIONAL FEDERATION.

The number of the *Bulletin* issued December 28, 1934, contains reports of the Committee on Specialties, information relative to the Pharmaceutical Congress to be held in Brussels in 1935, Regulations governing the Practice of Pharmacy in various countries—Belgium, Czechoslovakia, Egypt, Great Britain, Hungary, Netherlands, Poland, United States, Spain, Sweden, Bucharest, Rumania. An article by Col. J. Thomann, of Berne, discusses Military Pharmacy, another is devoted to the Centenary of Dr. Charles Davilla. The number concludes with rosters of pharmaceutical activities in Germany, United States, Belgium, Finland, France, Great Britain, Hungary, Latvia, Luxemburg, Netherlands, Sweden, Switzerland and Czechoslovakia.

Secretary General J. Breugelmans and Secretary T. Potjewijd have made a very valuable contribution by the publication of this number of the *Bulletin of the International Pharmaceutical Federation*.

John P. Jelinek, of St. Paul, is completing his second year as president of the Northwest Pharmaceutical Bureau under whose auspices the Northwest Drug Show is held annually. Mr. Jelinek will conduct the bureau conference at a 6 o'clock dinner, Wednesday, February 20th.

Miss Mary A. Fein, of Little Rock, Ark., has a record of long service as secretary of Arkansas Pharmaceutical Association. The 25th anniversary of her incumbency received wide recognition from pharmacists and State pharmaceutical associations. While no longer secretary, her interest in pharmacy continues. and she is a frequent visitor to adjoining State associations and is an occasional visitor at meetings of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Her service was given publicity after the election of Miss Alice Garvin to succeed her lamented father, Patrick J. Garvin.

Charles H. LaWall is on the program for an address on Pharmacy and Early Pharmacy, to be delivered at the Widener Branch of Free Library, Philadelphia.

Paul C. Olsen has recently completed a careful factual study of the results of stabilization in a typical retail drug store. We enclose a mimeograph copy of his report which he has just handed to us. Dr. Olsen advises that he is working up similar studies on the results obtained in other typical stores.

It would appear from this study by Olsen and a few other critical researches that have been conducted, that there is a whole lot more to say in favor of stabilization to-day than ever before.

Frederick W. Connolly, Boston, Mass., has presented to the AMERICAN PHARMACEUTICAL ASSOCIATION a formulary of the London Hospital for the treatment of skin diseases. The staff of the hospital includes a pharmacist, the year of issuance is 1850.

OBITUARY.

CHARLES M. BLANEY.

Charles M. Blaney, member of the AMERICAN PHARMACEUTICAL ASSOCIATION, and a retired pharmacist of Baltimore, died January 16th, aged fifty-six years. After his retirement Mr. Blaney gave much of his time to aiding others in various pharmaceutical activities. He contributed toward the Headquarters fund and after the building was completed donated a number of articles for the Museum.

Mr. Blaney was a member of the Maryland Pharmaceutical Association, of the Baltimore Retail Druggists' Association, and the Veteran Druggists' Association. He was deeply interested in the U. S. P. and N. F. revision work.

The Baltimore Veteran Druggists' Association attended the funeral in a body.

W. L. CLIFFE.

William L. Cliffe, member of the AMERICAN PHARMACEUTICAL ASSOCIATION and active in pharmaceutical affairs, both national and state, died suddenly, February 4th, at his home in Frankford, Pa. (Philadelphia). After completing his early school education he was apprenticed with F. H. Basset in Frankford. In 1882, he matriculated at the Philadelphia College of Pharmacy and graduated in 1884; after graduation he engaged in business on his own account at Kensington Avenue and Somerset Street.

Mr. Cliffe took a leading part in college activities and served the Alumni Association as president and in other offices, and the college as a member of its board of trustees and active on its committee of instruction, and of education, rendering most valuable service.

He was a former president of Pennsylvania Pharmaceutical Association, a member of the State Board of Pharmacy and a former vice-president of the AMERICAN PHARMACEUTICAL ASSOCIATION. He had a part in all of these organizations in their efforts for promoting pharmacy. The writer, a classmate, valued his friendship highly.

The deceased is survived by his widow.

EDGAR A. RIDGELY.

Edgar A. Ridgely, president of the Indiana Pharmaceutical Association, died January 24, 1935, following an attack of Angina pectoris. Mr. Ridgely was attending a testimonial dinner to a fellow-member, E. C. Went, newly elected Mayor of Mishawaka. Mr. Ridgely was scheduled as one of the speakers of the occasion, presided over by Harry Noel as toastmaster.

Mr. Ridgely was born near Olney, in Southern Illinois, where he received his early education and later attended the Southern Collegiate Institute at Albion, from which institution he graduated. After teaching for several years he matriculated at Valparaiso University, from where he graduated in 1902. After graduation he served for a time as drug clerk and then entered business on his own account in East St. Louis. He afterward located in Gary, Indiana.

Mr. Ridgely was interested in civic affairs and active in Indiana Pharmaceutical Association of which he was elected president last year. Mr. Ridgely was 56 years of age and is survived by his widow and three daughters.

E. D. IRVINE.

Ephraim Dinsmore Irvine, honorary member of the Illinois Pharmaceutical Association for many years, and editor and publisher of the *Western Druggist*, afterward known as the *Drug Bulletin*, died at his home in Oak Park, Sunday, January 27th, at the age of 68. Mr. Irvine was graduated from the Chicago College of Pharmacy in 1893 as an honor student and was president of his class. He was for a time engaged in the drug business in North Dakota, but returned to Chicago and became a member of the teaching staff of the college, as assistant to Professor Hallberg. Shortly afterward he joined the *Western Druggist* staff and upon the death of G. P. Engelhard succeeded to the editorship and ownership of that journal. He has been a member of the Chicago Veteran Druggists' Association since 1920. He leaves a wife and daughter. The funeral services were held at the family residence, 725 Clinton Street, Oak Park, and the members of the Chicago Veteran Druggists Association attended in a body.—WM. B. DAY, *Dean*.

SOCIETIES AND COLLEGES.

EIGHTY-THIRD ANNUAL MEETING AMERICAN PHARMACEUTICAL ASSOCIATION AND AFFILIATED ORGANIZATIONS.

The Council of the AMERICAN PHARMACEUTICAL ASSOCIATION has approved the week of August 5th to 10th as the time and the Hotel Multnomah, Portland, Ore., as the headquarters for the 1935 meeting.

The North Pacific Branch of the A. PH. A. will have direct charge of arrangements for the meeting under the supervision of Local Secretary Dean A. O. Mickelsen, North Pacific College of Pharmacy, Portland, and with the active coöperation of committees representing the pharmacists of Oregon, Washington, Idaho, California and Montana. This is the first time that the A. PH. A. has met in this section and every effort is being exerted to make it an outstanding event.

The pharmaceutical associations of Oregon, Washington and Idaho will hold their annual meetings, jointly, in Portland on Monday and Tuesday, August 5th and 6th, which will add greatly to the interest and attendance at this unusual pharmaceutical gathering.

The Plant Science Seminar and the National Conference on Pharmaceutical Research will hold their annual meetings the previous week, the latter on Saturday, August 3rd. The National Association Boards of Pharmacy and the American Association Colleges of Pharmacy will hold their annual meetings, as usual, on Monday and Tuesday, August 5th and 6th.

A joint banquet for all groups, including those attending the state association meetings, is scheduled for Tuesday evening, August 6th.

The sessions of the A. PH. A., including those of the Conference of Pharmaceutical Association Secretaries and of the Conference of Pharmaceutical Law Enforcement Officials will occupy Wednesday, Thursday and Friday, closing Friday evening.

On Saturday, all visitors will be taken on an all-day trip by bus, over the famous Columbia River Highway during which an out-door luncheon will be served. Other entertainment features will be scheduled during the week and every opportunity provided to see the many unusual points of interest in this wonderful section of our country.

The arrangements for the various business sessions and the entertainment features will be announced as they are completed in a series of news bulletins to be issued by the Committee on Publicity.

The American Chemical Society will hold its summer meeting in San Francisco during the week of August 19th, which will be very convenient for those who wish to also attend this meeting, with a week in between to sightsee.

Portland has ample hotel facilities for the convention. The Hotel Multnomah will be given over to the business sessions and entertainment of the delegates and visitors to the A. PH. A. and related organizations. The headquarters of the state associations will be located in other hotels within easy access to the Multnomah, so that visiting will be easy.

The Committee on Transportation of the A. PH. A. will soon have an important announcement in reference to rates and time. The certificate plan will not be necessary because of the unusually low round-trip or single rates, including choice of routes and full stop-over privileges. A variety of interesting side-trips will be offered at low cost. Parties to travel together are being made up in various centers and special train accommodations will be offered from Chicago and other points.

The automobile roads are excellent and the accommodations for those who prefer to travel this way are fine. Many scenic attractions can be visited by automobile more conveniently and a diversity of routes is available.

This annual meeting will be an exceptional one from the standpoint of program and attendance. A very interesting section of our country can be seen with every convenience and at reasonable cost and during the most favorable period of the year. The annual meetings of the three state associations will provide the unusual opportunity of meeting the pharmacists of this entire section.

SECTION AND CONFERENCE PAPERS FOR THE PORTLAND MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATIONS.

The time is approaching for preparing papers and reports for the Portland meeting. The list of officers may be found in the roster; for your covenience the names of the presiding officers and secretaries are here given: **Scientific Section,** *Chairman,* E. V. Lynn, Massachusetts College of Pharmacy, Boston; *Secretary,* F. E. Bibbins, 5840 Washington Blvd., Indianapolis, Ind. **Section on Education and**

Legislation, *Chairman,* Oscar E. Russell, 531 So. Main St., Elkhart, Ind.; *Secretary,* L. W. Rising, University of Washington, Seattle, Wash. **Section on Practical Pharmacy and Dispensing,** *Chairman,* H. M. Burlage, University of North Carolina, Chapel Hill, N. C.; *Secretary,* Leon W. Richards, University of Montana, Missoula, Mont. **Section on Commercial Interests,** *Chairman,* Henry Brown, Scranton, Pa.; *Secretary,* R. T. Lakey, Cass & Hancock Aves., Detroit, Mich. **Section on Historical Pharmacy,** *Chairman,* C. O. Lee, Purdue University, La Fayette, Ind.; *Secretary,* H. W. Youngken, Massachusetts College of Pharmacy, Boston, Mass.; *Historian,* E. G. Eberle, 2215 Constitution Ave., Washington, D. C.

National Conference on Pharmaceutical Research, *Chairman,* E. N. Gathercoal, 710 So. Wood St., Chicago, Ill.; *Secretary,* John C. Krantz, Jr., 2411 No. Charles St., Baltimore, Md. **Conference of Pharmaceutical Association Secretaries,** *President,* F. V. McCullough, New Albany, Ind.; *Secretary,* Carl G. A. Harring, 20 Glen Road, Newton Center, Mass. **Conference Pharmaceutical Law Enforcement Officials,** *Chairman,* R. L. Swain, 2411 No. Charles St., Baltimore, Md.; *Secretary,* M. N. Ford, New State Office Building, Columbus, Ohio. **Plant Science Seminar,** *Chairman,* Frank H. Eby, 240 Powell Road, Springfield, Pa.; *Secretary,* F. J. Bacon, Western Reserve University, Cleveland, Ohio.

American Association of Colleges of Pharmacy, *President,* Ernest Little, Rutgers University College of Pharmacy, Newark, N. J.; *Secretary,* Zada M. Cooper, University of Iowa, College of Pharmacy, Iowa City, Ia.; *Chairman of Executive Committee,* C. B. Jordan, Purdue University, La Fayette, Ind.

National Association of Boards of Pharmacy, *President,* C. H. Evans, Warrenton, Ga.; *Secretary,* H. C. Christensen, 130 No. Wells St., Chicago, Ill.

SECTION ON HISTORICAL PHARMACY.

"The officers of the Historical Section earnestly solicit the coöperation of all members and friends of the AMERICAN PHARMACEUTICAL ASSOCIATION as they begin their work in preparation for the historical program for the annual convention of the Association in Portland, Oregon.

"Our ASSOCIATION has not met in the far west for a number of years and we are anxious to carry a renewed appreciation of the glorious art of the Apothecary of the past into this section.

"Modern Pharmacy has been built upon the past and every phase of pharmacy which has transpired, although but recently, is history. The stories of drug stores, pharmaceutical manufacturing houses, local or state associations, men and institutions of pharmacy are all within the realm of history. Send us the titles and abstracts of your stories at your earliest convenience. You are invited to contribute to the Archives of American Pharmacy now housed in the AMERICAN INSTITUTE OF PHARMACY in Washington, D. C.—HEBER W. YOUNGKEN, *Secretary.*

PHI DELTA CHI FRATERNITY.

The annual meeting of the Grand Council of Phi Delta Chi was held in Baltimore, at the Emerson Hotel, February 7th and 8th.

The gala event of the conclave was the Annual Banquet, held February 8th. After the close of the conclave many of the fraters visited the AMERICAN INSTITUTE OF PHARMACY.

AMERICAN DRUG MANUFACTURERS' ASSOCIATION.

Plans for the twenty-fourth annual meeting of the American Drug Manufacturers' Association at Hot Springs, Va., May 6th to 9th are in preparation. The schedule of sessions places the first general session on May 7th, sessions of the biological, crude drug, pharmaceutical and scientific sections will start May 6th. The annual dinner is scheduled for May 8th.

In his first call for the meeting, President A. Homer Smith says:

"This year general and specific problems of unprecedented magnitude have confronted the industry. Many of these will be still pending when we assemble at The Homestead. There is no better way to approach a satisfactory solution of these pressing issues than through an interchange of ideas on the floor of the convention and through personal contacts. It is therefore urged in the interest of all concerned that every member firm arrange now to have present a representative delegation of their technical and business staffs. I shall be most grateful for your assurances to this end."

DRUG AND CHEMICAL DINNER.

Eight hundred reservations for the tenth annual dinner of the drug, chemical and allied trades, to be held March 21st in the Waldorf-Astoria, New York City, have been received by the Drug, Chemical and Allied Trades section of the New York Board of Trade, which organization sponsors the dinner.

NORTH CAROLINA PHARMACEUTICAL ASSOCIATION.

The meeting date of North Carolina Pharmaceutical Association has been fixed for May 13th–15th, in the Robert E. Lee Hotel as convention headquarters, Winston-Salem. Sam E. Welfare and M. T. Lesley have been named Local Secretary and Assistant Local Secretary.

NEBRASKA PHARMACEUTICAL ASSOCIATION.

Nebraska will hold the fifty-fourth annual convention at the Hotel Cornhusker, Lincoln, February 25th–28th. Many problems of legislation will be discussed and decided. Speakers of prominence are named on the program.

MAINE PHARMACEUTICAL ASSOCIATION.

It was voted to hold the Annual Convention at the Rangeley Lakes House, Rangeley, Me., on June 25–28, 1935. The Mid-Winter meeting was held in Augusta, Friday, February 15, 1935.

A suggestion of forming a Council of Pharmacy, in which every section of the State will be represented, was accepted and the Executive Committee will proceed at once to get the Council organized and ready to function. The purpose of this Council of Pharmacy is to create more interest in Pharmacy in the State, and to create a better spirit of coöperation among the Druggists of the State. The tentative plan for the organization of the Council of Pharmacy is for the President, B. K. Murdock, to appoint two members from each county to form the Council, which is to elect two members to serve on the executive committee of the Maine Pharmaceutical Association.

PUERTO RICO PHARMACEUTICAL ASSOCIATIONS.

The Board of Directors of Puerto Pharmaceutical Association is composed of *President*, Alberto Pelegrina, San Juan; *Vice-President*, Candido A. Martinez, Caguas; *Secretary-Treasurer*, Ramon Lopez Irizarry, San Juan; *Counsellors:* Angel M. Diaz, Hector Urrutia, Carlos G. Gonzalez, Francisco L. Anselmi, Antonio Maisonave, Armando Arroyo, Juan T. Puig, Zoilo Zotomayor, Francisco Sosa Perez, Raul Acosta, Victoriano Pagan Colon, Enrique Angalde, Luis R. Emanuelli, V. M. Colon.

Members of the State Board of Pharmacy are: *President*, Ramon Lopez Irizarry, San Juan; *Secretary*, Washington Llorens, Arecibo; *Treasurer*, Lumen M. Mendez, Lares; Luis A. Torregrosa, San Juan; Sergio Seijo, Arecibo.

Report of the Director of the School of Tropical Medicine of the University of Puerto Rico, under the auspices of Columbia University for the year ending June 14, 1934. Published by the University of Puerto Rico and Columbia University, 67 pages.

PROPOSALS AFFECTING PHARMACEUTICAL PROFESSION IN THE PHILIPPINE ISLANDS.

Two important proposals which would materially affect the pharmaceutical profession in the Philippine Islands are being studied by the board of pharmaceutical examiners, upon the recommendation of the Philippine Pharmaceutical Association.

The first proposal would confine the practice of pharmacy in the Philippines exclusively to Philippine and American citizens. Its purpose is to nationalize the profession, and protect Philippine pharmacists. This plan, which will be brought before the Legislature, will not, however, affect foreign subjects now practicing pharmacy in the Philippines.

The second plan provides that all pharmacy and drug store owners shall be graduates of pharmacy schools. This is in accordance with the system followed abroad, where only regular pharmacists are allowed to own drug stores, it was declared.

On July 25th, the board of pharmaceutical examiners, at its regular monthly meeting, approved the proposal to make the sale of household remedies exclusive to American or Philippine residents who have resided in the Islands at least one year before the filing of application with the board. All applicants should be of good character, should not suffer from contagious diseases, and should have passed prescribed examinations. (Acting Trade Commissioner Carl H. Boehringer, Manila.)

The following officers of Philippine Pharma, ceutical Association have been elected: *President*, Apolonio R. Chaves; *First Vice-President*-Alfredo C. Santos; *Second Vice-President*, José E. Jimenez; *Secretary*, Antonio Belmonte, c/o Manila College of Pharmacy, Manila; *Assistant Secretary*, Victorio C. Dionisio; *Treasurer*, Pedro C. Batallones; *Assistant Treasurer*, Remedios Reynado. *Board of Directors:* Pedro T. Maglalang; Petrocinio Valenzuela; Florencio Gavino; José V. Gloria;

Delfin Santos Ocampo; Antonio G. Llamas; Felipe J. Concepcion; Servando de los Angeles.

OFFICERS OF THE JAPAN PHARMACISTS' UNION.

At the 13th general meeting of the Japan Pharmacists' Union, held January 18th and 19th, in Tokyo, Dr. Kametaro Kawai was reëlected president; the vice-presidents are Kimyiro Ishii and Buro Ogimura. President Kawai considered national health insurance most important and, unless separation of medical and pharmaceutical practice is brought about, pharmacists would be seriously affected, because physicians, without such restrictive provison, would supply medicines and cut deeply into the income of pharmacists.

AMERICAN DRUGGISTS' FIRE INSURANCE COMPANY.

The annual meeting of the American Druggists' Fire Insurance Co. was held February 11th–13th. This was the 30th anniversary of the company; dinner was served at the Cincinnati Club and Dr. James H. Beal was persuaded to deliver an address on Abraham Lincoln.

The following officers were elected: *President*, Charles H. Avery; *Vice-President*, James H. Beal; *Secretary and General Counsel*, Frank H. Freericks; *Assistant Secretary*, W. P. Starkey; *Treasurer*, Walter Rothwell; *Assistant Treasurer*, E. H. Thiesing.

LEGAL AND LEGISLATIVE.

THE COPELAND BILL.

An amended form of the Copeland bill (S. 5) was submitted to the Senate committee on commerce by the chairman, Senator Royal S. Copeland, February 13th, and assigned to a sub-committee for public hearings, consisting of Senator Bennett Champ Clark, of Missouri, Chairman; Senator Hattie W. Caraway, of Arkansas; and Senator Charles L. McNary, of Oregon. The sub-committee has not yet set a date for hearings, but has promised that it will give ample notice.

The title of the bill has been changed to read: "An Act to prevent the adulteration, misbranding and false advertising of food, drugs and cosmetics in interstate, foreign and other commerce subject to the jurisdiction of the United States, for the purposes of safeguarding the public health and preventing deceit upon the purchasing public."

The variation clause is changed only by striking out two phrases, one covering names which "simulate" those recognized in an official compendium, and the other reading "If it fails to meet the definition and description set forth therein."

The definition of adulterated drugs and cosmetics now includes: "If it consists in whole or in part of any filthy, putrid or decomposed substance; or if it has been prepared, packed or held under insanitary conditions whereby it may have become contaminated with filth, or whereby it may have been rendered injurious to health; or if its container is composed of any poisonous or deleterious substance which may render it injurious to health."

The requirement for "explicit" directions for use has been changed to "adequate" directions for use.

Where the original bill made a drug misbranded "if its name is the same as, or simulates, a name recognized in an official compendium and is not packaged and labeled as described therein," the new language reads: "If its name is recognized in an official compendium, or it purports to be a drug the name of which is so recognized. . . ."

COMPULSORY SICKNESS INSURANCE OPPOSED BY AMERICAN MEDICAL ASSOCIATION.

According to the Press reports of February 16th, the American Medical Association reiterated its vigorous opposition to compulsory sickness insurance plans being studied by the President's Committee on Economic Security. But it tempered its stand by approving projects for setting up systems of voluntary illness insurance on a community basis.

Decrying what it termed attempts to regiment the profession in proposed legislation and attacking certain sections of the Wagner bill embodying the national administration's social security program, the Association's house of delegates adopted a declaration of policy for its 100,000 member physicians.

The report, carried unanimously at the sec-

ond extraordinary session in the organization's history, set forth:

"The house of delegates of the American Medical Association reaffirms its opposition to all forms of compulsory sickness insurance whether administered by the Federal Government, the governments of the individual States or by any individual industry, community or similar body. It reaffirms also its encouragement to local medical organizations to establish plans for the provision of adequate medical service for all of the people, adjusted to present economic conditions, by voluntary budgeting to meet the costs of illness."

The statement pointed out more than 150 plans for medical service were undergoing study and trial in various communities and added:

"Your Bureau of Medical Economics is ready and willing to advise medical societies in the creation and operation of such plans. The plans will serve the people of the community in the prevention of disease, maintenance of health and with curative care in illness. They must meet apparent economic factors and safeguard the medical profession."

"The House of Delegates emphasizes the necessity for separate provision for hospital facilities and physicians' services. Payment for medical service, whether by prepayment plans, instalment purchase or voluntary hospital insurance plans, must hold, as absolutely distinct, remuneration for hospital care on one hand and the individual, personal scientific ministrations of the physician on the other."

The association's trustees were urged to request the Bureau of Medical Economics to "study further plans now existing and developing with special reference to the way in which they meet the needs of their communities, costs of operation, quality of service, effect of such service on the medical profession, the applicability to rural, village, urban and industrial population and to develop for the association's June meeting model plans adapted to the needs of populations of various types."

NRA EXTENSION ASKED BY PRESIDENT ROOSEVELT.

President Roosevelt, on February 20th, called on Congress to extend the National Industrial Recovery Act for a period of two years from June 16th.

In a message read to both Houses he declared: "The fundamental purposes and principles of this act are sound. To abandon them is unthinkable. It would spell the return of industrial and labor chaos."

While admitting that there should be amendments to the present law, the President laid down certain specific benefits which, he said, have accrued and which must not be abandoned. He listed among these the abolition of child labor, the establishment of maximum hours of work and of minimum wages, the right of the workers to collective bargaining and the freeing of industry from dishonorable competition.

HOUSE ELIMINATES HEALTH INSURANCE PROVISION OF THE WAGNER-LEWIS BILL.

The House Ways and Means Committee has given consideration to the Wagner-Lewis bill during the past month. An important change was made in eliminating relief insurance from the measure.

Apparently at the request of critics of State medicine the committee deleted from the bill authority for the projected Social Insurance Board to study and recommend legislation to afford economic security through health insurance.

Observers recalled health insurance was not included in the report of the President's economic security committee on which the Wagner-Lewis bill was based.

MARIJUANA.

S. 53, Montana, to amend the law prohibiting the production, distribution or possession of marijuana, proposes to make a violation of the act a felony, punishable by imprisonment in the penitentiary for from one to five years and/or a fine of from $500.00 to $1000.00. A Maryland amendment of the narcotic bill relates to prohibition of marijuana. The statement is made that cigarettes containing the narcotic are sold.

ARKANSAS.

Arkansas introduced H. 105, apparently to supplement the pharmacy practice act, proposing (1) to define drugs as "any drug or compound listed in the United States Pharmacopœia or National Formulary, or both, which are used for the prevention, mitigation or cure of disease;" (2) "to prohibit the distribution of drugs, as defined, except by registered pharmacists;" (3) "to permit the board of pharmacy to enjoin the operation of any store not complying with the pharmacy laws." H. 110 and S. 67 propose "to repeal the laws regulating the possession and distribution of narcotic drugs and to enact what the drafts-

men of these bills cite as the "uniform narcotic drug act." The bills, however, differ from the model uniform narcotic drug act in some important particulars and contain obvious errors in phraseology. They omit the provisions in the model bill intended to limit the gross quantity of a habit-forming drug a person can buy in exempt preparations within a period of forty-eight hours.

INDIANA.

H. 113 proposes "to authorize the state board of pharmacy to appoint a narcotic inspector to enforce, and to collect information necessary to enforce, the state and federal laws relating to narcotic drugs." S. 83 proposes "to repeal the laws regulating the distribution and possession of narcotic drugs and to enact what apparently is the uniform narcotic drug act." S. 118, to amend the workmen's compensation act; H. 211 proposes to authorize counties, cities and towns "to supply insulin free of charge to citizens who are in need of insulin treatment for diabetes and who are financially unable to purchase the drug."

ARIZONA.

H. 19, Arizona, proposes to enact a new pharmacy practice act. Apparently this bill proposes to prohibit physicians from dispensing drugs and medicines but permits them to administer personally "drugs and medicines carried or kept for emergencies. . . . in order to supply the immediate needs of their own patients."

MISSOURI.

H. 73, Missouri, proposes to forbid the sale or other distribution of acetylsalicylic acid, carbolic acid or iodine, except on the prescription of a licensed physician, dentist or veterinarian.

MONTANA.

S. 35, Montana, to supplement the pharmacy practice act, has passed the house, proposing "to authorize the state board of pharmacy to adopt rules requiring registered pharmacists to keep a record of all poisons sold or disposed of, containing the signatures of the purchasers and such other information as may be required by the board."

BOOK NOTICES AND REVIEWS.

Toxicologie Moderne: A L'Usage des Étudiants en Medecine et en Pharmacie, des Medecins Legistes et des Chimistes Experts. By ROGER DOURIS. 1935. 339 pages, 47 figures. Published by Vigot Frères, Paris.

Should the pharmacist specialize in toxicology? Conversely, why not? His daily training teaches him much regarding the occurrence, properties, reactions, incompatibilities, chemical and pharmaceutical behavior of poisons, and he is required to be familiar with customary antidotes. Blyth defined toxicology in the title to his book: "Poisons: Their Effect and Detection." It should be frankly appreciated that the pharmacist is not trained in pathology. Therefore, he will not be able to make detailed studies of a pathological nature. However, he is very specifically trained in the detection of poisons. Professor Douris has prepared a manual not only for medico-legal chemists and industrial toxicologists, but also for students of pharmacy and medicine.

The book is divided into eight distinct parts. The first four chapters discuss general aspects of poisoning, variations in toxicity according to methods of administration, relationship of age and method of administration to effect, transformation within the organism and tabulate a series of antidotes. The second part contains fourteen chapters dealing with the method of collecting viscera, tests for the metallic poisons, and methods of extraction of organic poisons and alkaloids. A brief chapter discusses methods of physiological identification. This section closes with a discussion of poisonous gases and corrosives. A series of excellent tables indicates the detailed procedures to be followed in separation and identification of inorganic and organic poisons.

The third portion gives specific methods to be used in testing for various organic or inorganic poisons, both chemically and by physiological methods, and lists the toxic and the lethal doses of many of these products. In this chapter ureides, barbituric acid compounds, glucosides, alkaloids, ptomaines and metallic poisons are discussed in some detail.

The fourth section deals with war gases, giving their "nom de guerre," formula, boiling point, physiological action and common adjuvants. So far as possible, the toxicity of these products is also recorded. The fifth chapter deals with poisons to be sought in examining drinking water. The sixth section

discusses the action of bacterial toxins and of mushrooms. The seventh section deals with medico-legal identification of blood, sperm, stomach contents, etc., and is followed by a brief discussion of the toxicological reports submitted in the French Courts.

This book supplements information given by Blyth, by Autenrieth and by Peterson, Haines and Webster. It will prove very useful for pharmaceutical reference purposes.—JAMES C. MUNCH.

Annual Survey of Research in Pharmacy, 1933–1934 and Proceedings of National Conference on Pharmaceutical Research, 1933–1934. Edited by JOHN C. KRANTZ, JR., *Secretary*. Press of The John D. Lucas Printing Co., Baltimore.

Secretary John C. Krantz, Jr., has presented an annual volume which shows his usual care and the research subjects reported speak well for pharmacy. The subjects are arranged in alphabetical order under "Specific Problems" and "General Problems" and the former 228 in number and the latter are listed under Bibliography, Botany and Pharmacognosy, Pharmaceutical Economics, Pharmaceutical Education, Pharmaceutical History, Pharmaceutical Law, Pharmaceutical Publications, Pharmaceutical Inter-Relationships, Pharmaceutical Retail Studies, Revision Studies, N. F., Revision Studies, U. S. P. and Miscellaneous. The latter include general, directing and general biological research, household products, medicinal chemicals, medicinal organo-metallic compounds, organic research and synthesis, pharmaceutical research and physical-chemical research.

The Table of Contents lists 18 titles; the Preface concisely relates the functions of the National Conference of Pharmaceutical Research and refers to its accomplishments and aims. The contributors are to be congratulated for their work which the Editor has ably presented in this volume. The book contains 170 pages.

The Therapy of the Cook County Hospital. Edited by BERNARD FANTUS, M.D., Chicago.

In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in the *Journal of the American Medical Association.*

Lea & Febiger, Memorial Volume.—This sketch was originally prepared by Henry Charles Lee in 1885, commemorating the one hundredth anniversary of the founding of Lea & Febiger. It has now been revised and amplified and the title changed to conform to the present anniversary—the completion of the 150 years of continuous business activities. The volume contains a number of interesting illustrations, among them the copy of a check returned to General LaFayette on the occasion of a second visit to the United States in 1824 for the sum of $400.00, upon which the business had been started. There is also a copy of a letter from Washington to Matthew Carey and a copy of Carey's first publication of the *Pennsylvania Evening Herald.*

Proceedings of the 60th Regular Meeting of the National Wholesale Druggists' Association, held at White Sulphur Springs, W. Va., October 1–4, 1934. Former proceedings have been noted in these columns, this report in a general way follows the plan. Much information of value to all readers is contained in these pages relating to laws and business practices. The volume includes the fair trade practices for wholesale druggists discussed in Chicago on December 6, 1934, briefly referred to in the December JOURNAL, page 1252. Publications obtainable through the N. W. D. A. are listed; also, bulletins of the statistical division, of the Druggists' Research Bureau, 1928–1929, case studies by the latter, numbering 256 reports. In addition to the records, the addresses and reports contain valuable information relating to all divisions of the drug industries.

We are in receipt of the following dissertations for the Doctor's degree:

Beiträge zur mikroskopischen Diagnostik der Gemüse, Leguminosenhülsen, Wurzel und Knollengemüse, Blatt und Stengelgemüse, Dissertation zur Erlangung der Doktorwürde der Mathematisch - Naturwissenschaftlichen Fakultät der Hamburgischen Universität. Vorgelegt von Hans Volger aus Braunlage (Oberharz), Hamburg, 1934. (Dr. G. Bredemann.)

Beiträge zur Chemie des Gummigutti (Gamboge). Inaugural-Dissertation zur Erlangung der philosophischen Doktorwürde. Vorgelegt der Mathematsch - Naturwissenschaftlichen Abteilung der Philosophischen Fakultät der Universität Basel, von Martha Furrer Apothe-

kerin aus Basel. (Dr. H. Zörnig and Dr. P. Casparis.)

Beiträge zur Pharmackognosie der Liliifloren, Anatomie des *Laubblattes*. Inaugural-Dissertation zur Erlangung der philosophischen Doktorwürde vorgelegt der Mathematisch-Naturwissenschaftlichen Abteilung der Philosophischen Fakultät der Universität Basel von Paul Schonman, Apotheker aus Basel. (Dr. H. Zörnig and Dr. G. Senn.)

NOTICE TO CONTRIBUTORS TO THE JOURNAL AMERICAN PHARMACEUTICAL ASSOCIATION.

The following notice has been prepared from comments received from members of the Board of Review of Papers and of the Publication Committee.

Manuscripts should be sent to Editor E. G. Eberle, 2215 Constitution Ave., N. W., Washington, D. C.

All manuscripts should be typewritten in double spacing on one side of paper $8^1/_2$ x 11 inches, and should be mailed in a flat package—not rolled. The original (*not* carbon) copy should be sent. The original drawings, not photographs of drawings, should accompany the manuscript. Authors should indicate on the manuscript the approximate position of text figures. All drawings should be marked with the author's name and address.

A condensed title running page headline, not to exceed thirty-five letters, should be given on a separate sheet and placed at the beginning of each article.

The method of stating the laboratory in which the work is done should be uniform and placed as a footnote at end of first page, giving Department, School or College. The date when received for publication should be given.

Numerals are used for figures for all definite weights, measurements, percentages, and degrees of temperature (for example: 2 Kg., 1 inch, 20.5 cc., 300° C.). Spell out all indefinite and approximate periods of time and other numerals which are used in a general manner (for example: one hundred years ago, about two and one-half hours, seven times).

Standard abbreviations should be used whenever weights and measures are given in the metric system, *e. g.*, 10 Kg., 2.25 cc., etc. The forms to be used are: cc., Kg., mg., mm., L. and M.

Figures should be numbered from 1 up, beginning with the text-figures (line engravings are always treated as text-figures and should be designed as such) and continuing through the plates. The reduction desired should be clearly indicated on the margin of the drawing. All drawings should be made with India ink, preferably on white tracing paper or cloth. If coördinate paper is used, a blue-lined paper must be chosen. Usually it is desirable to ink in the large squares so that the curves can be more easily read. Lettering should be plain and large enough to reproduce well when the drawing is reduced to the width of a printed page (usually about 4 inches). Photographs intended for half-tone reproduction should be securely mounted with colorless paste.

"Figure" should be spelled out at the beginning of a sentence; elsewhere it is abbreviated to "Fig.;" per cent—2 words.

The expense for a limited number of figures and plates will be borne by the JOURNAL; expense for cuts in excess of this number must be defrayed by the author.

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(1) Author, A. Y., *Am. J. Physiol.*, 79, 289 (1927).

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